

THE RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
Railway Engineer • TRANSPORT • The Railway News
The Railway Times Herapaths Railway Journal
RAILWAYS ILLUSTRATED ESTABLISHED 1835 RAILWAY OFFICIAL GAZETTE

PUBLISHED EVERY FRIDAY

AT
33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1Telegraphic Address: "TRAZETTE PARL., LONDON"
Telephone No.: WHITEHALL 9233 (6 lines)Annual subscription payable in advance and postage free:
British Isles and Abroad £2 5s. 0d.
Single Copies One Shilling
Registered at the General Post Office, London, as a Newspaper

VOL. 70. No. 5

FRIDAY, FEBRUARY 3, 1939

CONTENTS

	PAGE
Editorials	161
Letters to Editor	167
The Scrap Heap	170
Overseas Railway Affairs	171
Railway Speed Developments in 1938	174
Clearing Points of Ice and Snow	179
Measured Shovel Packing	180
Machine Tool Demonstration in Glasgow	182
Invalid Saloon for the Southern Railway	183

ELECTRIC RAILWAY TRACTION

A Supplement illustrating and describing developments in Electric Railway Traction is presented with every copy of this week's issue

L.N.E.R. Chief General Managership

ALONE of the four main-line railway companies which emerged from grouping in 1923, the London & North Eastern Railway retained until last year both the Chairman and the Chief General Manager who took charge from the beginning of the life of the enlarged enterprise. Mr. William Whitelaw, for personal and family reasons, retired at the end of September last from both the chairmanship and the board of the L.N.E.R., and was succeeded by Sir Ronald Matthews. This week in our Personal columns we publish the official announcement that Sir Ralph Wedgwood is retiring in a month's time, and is being succeeded by Mr. C. H. Newton. In having lasted for more than 15 years, the partnership between Mr. Whitelaw and Sir Ralph Wedgwood covered a period which—though in future it may be equalled or even excelled in duration between other chairman and general managers—is likely to remain unique so far as concerns the peculiar problems encountered during that period. Moreover, it is interesting to note that Sir Ralph Wedgwood is thus far the only man to have held the title of Chief General Manager. This resulted, of course, from the decision of the L.N.E.R. at grouping to adopt an area system of management with divisional general managers in charge respectively of the Southern, North Eastern, and Scottish areas, but with their efforts co-ordinated in the person of a Chief General Manager. This divisional organisation is in principle similar to that of the South African Railways, the German Reichsbahn, and that which has more recently been adopted by the French National Railways

with its system of regional control corresponding approximately to the old company lines. In being selected to succeed Sir Ralph Wedgwood as Chief General Manager of the L.N.E.R., Mr. Newton, whose portrait and biography appear on page 185, will bring to bear upon the highest office under the L.N.E.R. experience gained not only as Chief Accountant of the company, but also what he has had more recently as Divisional General Manager, Southern Area.

* * * *

Railway Wages

The hearing by the Railway Staff National Tribunal of the claims of the three railway trade unions began on January 24, continued for four days last week, and was resumed and concluded on January 31. The proceedings are reported on page 192. As had been expected, Mr. Marchbank specially urged the claim of the N.U.R., that the minimum rate for adult wages staff should be 50s. a week, and sought to support his arguments by submitting household budgets of employees. The A.S.L.E.F. stressed, among other points, that bigger locomotives had been put into service and that speeding up had taken place since the National Agreements were originally reached. The R.C.A. claimed pay increases and a reduction of working hours of salaried staff to forty a week. Suggestions were made by the union's spokesmen that the railway companies should reduce their capital and should recognise that factors exist which reduce revenue possibilities. Mr. Darbyshire, the companies' advocate, in a comprehensive reply, asserted that the share taken by labour out of the net product of the railway industry was excessive. He stated that 73 per cent. went to labour and 27 per cent. to capital, and contended there could be no justification for additions to labour costs until capital had received a fair share. Further, the unions' claims were not justified by any increase in stress and strain of the work, nor by the financial position of the railways. The tribunal's decision is awaited.

* * * *

The Week's Traffics

For the £225,000 drop in the earnings of the four group companies for the past week, passenger train traffic was responsible to the extent of £24,000, merchandise for £158,000, and coal for £43,000. The 3rd week's combined decrease was £199,000. To date the decrease for the four companies is £957,000, or 8.32 per cent., on total earnings of £10,550,000. In the first four weeks of 1938 there was an aggregate increase of £477,000. The decrease to date in 1939 is made up of £91,000 from passengers, £675,500 from merchandise, and £190,500 from coal.

	4th Week				Year to date	
	Pass.	&c. Goods	&c. Coal	&c. Total	Inc. or Dec.	%
L.M.S.R. ..	8,000	65,000	5,000	78,000	396,000	-8.50
L.N.E.R. ..	11,000	57,000	12,000	80,000	358,000	-10.35
G.W.R. ..	3,000	26,000	23,000	52,000	161,000	-8.23
S.R. ..	2,000	10,000	3,000	15,000	42,000	-2.93

London Transport receipts for the week show a decrease of £6,300, but for the 31 weeks of the current financial year the total of £17,602,400 shows an improvement of £183,300.

* * * *

Austrian Federal Railways in 1937

The absorption of Austria by the German Reich in March, 1938 caused the accounts for 1937 to be the last covering a full twelve months to be issued by the former Austrian Federal Railways. After the boom year 1929, the financial position steadily deteriorated until 1934, when an improvement set in. Operating receipts for 1937 were 475,394,631 Sch., or 16 per cent. better than in 1936

and working costs 471,141,844 Sch., an increase of 3.5 per cent., leaving a surplus of 4,252,787 Sch. as against a loss of 45,275,506 Sch. on the previous year. After deducting interest, depreciation and other charges, there was a net loss of 59,121,365 Sch., which was 31.8 per cent. better than the 1936 figure. Goods traffic produced the largest increase in receipts, namely, 21.4 per cent.; passenger takings rose 6.7 per cent. A certain proportion of these increases were due to the absorption of the Vienna-Aspang and Schneeberg lines. The number of loaded goods wagons hauled rose by 9.2 per cent. in home and 37.6 per cent. in foreign traffic. Salaries and pensions rose from 334,500,000 to 341,500,000 Sch. the total staff numbering 56,903—inclusive of 895 taken over with the lines above mentioned—against 55,537; there was a small increase in pensioners. About 25,750,000 Sch. were expended on electrification works and rolling stock, partly covered by State loans, and some 87,300,000 Sch. of public funds were granted to cover the loss incurred in 1937 and previous years.

* * * *

Trinidad Government Railway

The length of railway owned by the Trinidad Government is 118 miles on the 4 ft. 8½ in. gauge, of which 12 are double-tracked. Railway bus services have recently been introduced. Revenue from the railway for the year 1937 was \$134,854 more than for 1936, and operating expenditure increased by \$39,667, so that net earnings were \$95,187 higher, and covered "other charges" with a profit of \$32,038, which compares with a deficit of \$62,898 for 1936. After allowing for debt charges there was a net loss of \$249,823 in 1937. The Trinidad dollar is equivalent to the U.S.A. dollar:—

	1936	1937
Passengers	1,375,200	1,737,006
Goods traffic, tons .. .	543,003	581,000
Train-miles	424,521	445,731
Operating ratio, per cent. .. .	98.06	87.25
	\$	\$
Passenger receipts	135,104	184,723
Goods traffic receipts .. .	528,116	607,308
Gross earnings	722,084	856,938
Working expenditure .. .	708,092	747,759
Net earnings	13,992	109,179

Passengers increased in number by 26 per cent., and passenger receipts by 37 per cent. Goods tonnage advanced by 7 per cent. and goods traffic receipts by 15 per cent.

* * * *

New Zealand Railways in 1938

The New Zealand Minister of Railways, reviewing the work of his department during 1938, first called attention to the increased wage scales for second grade men, and the reclassification of those in the clerical and higher grades. Staff quarters too, had, he said, been modernised and increased in number wherever there was housing shortage. Turning to rolling stock he mentioned the various new types of carriage, improved ventilating, lighting, and general comfort for passengers. Thirty-three goods and six passenger road services had been acquired during the year, and road and rail timetables had been co-ordinated. The Minister also referred to the installation of electric colour-light signalling, also the doubling of the line, easement of grades and curves, and strengthening of bridges on various sections carried out in 1938. In the latter connection, it had been made possible for the new "G" class Pacific locomotives to run between Christchurch and Arthur's Pass, and very soon "K" class 4-8-4 engines would also be able to work over this route. All these improvements and the speeding up of services are expected to effect important economies in operation.

An "ROR" becomes an "ORR"

An official statement, bearing the signature of Herr Hitler himself, published in the German railway press, announces that the title, to which we have for some time been accustomed, of "Reichsbahnoberrat" has been altered to "Oberreichsbahnrat." Some other new titles have also been instituted to differentiate the functions of certain officials falling under the same salary and pension category. These, to English ears, peculiar titles frequently bear no relation to the staff classification met with on British railways and are practically untranslatable, making it difficult to compare the organisation of the service in the two countries. A similar difficulty is met with in the case of French and Belgian railway working, where one often finds an official entitled to call himself "ingénieur-en-chef" although occupying no position equivalent to what we understand by the term "engineer in chief." Many of these foreign titles represent the holder's professional qualifications, often the result of examinations, and do not indicate, save very generally, his place in the administration. For this reason they are usually best left untranslated.

* * * *

Early Spanish Railways

The civil war in Spain, in its recent developments, has extended over a part of the country which is historically interesting as the scene of the earliest railway enterprise in the Peninsula. The first railway to be constructed and open to public service was the line from Barcelona to Mataró, inaugurated on October 28, 1848. The concession for this railway was granted to José Maria Roca, José Biada, and José Salamanca. Roca was a Spanish business man resident in London, and Salamanca's wife was English. Half the capital was raised in England and the remainder in Spain. The engineers were Joseph and William Locke and the contractors were Mackenzie and Brassey. The first General Manager was Manuel Gibert. Salamanca afterwards constructed the Madrid-Aranjuez railway, opened to public service on February 9, 1851, and the Barcelona—Granollers line was opened shortly after. Several years earlier concessions for railways had been granted by King Fernando VII, but after his death Spain was engaged in a long and cruel civil war. The war ended with the Vergara agreement of August 31, 1839, but it was followed by the uncertain period of the Regency and the first concessions lapsed. The possibilities of railway enterprise again engaged attention in 1843, leading to the Commission and Report of 1844, which served as a basis for all subsequent railway legislation in Spain.

* * * *

Ignoring Level Crossing Warnings

Mr. J. H. Verstegen, Assistant Signal Engineer of the Netherlands Railways, gives a description in a recent issue of the *Organ für die Fortschritte des Eisenbahnwesens* of the automatic level crossing warning signals recently installed at several places on that system. White and red flashing lights, of differing periodicities are used to indicate "line clear" and "train coming" respectively, a practice now met with elsewhere on the Continent; but to avoid showing the red light should, say, a track circuit break down, and so encourage disrespect for its message, a steady yellow "out of order" light is exhibited if a failure takes place, with a time-element device to prevent it from acting too soon should a train be travelling unduly slowly. Unfortunately it is found that certain road vehicle drivers will deliberately ignore the warning that a train is approaching. Watch kept at Steenwijk crossing, the first equipped, revealed seven cases in three days, indicating

a not inconsiderable risk of accident, both to road drivers and railway passengers. We ourselves witnessed a flagrant case of the kind recently in Switzerland, and it is difficult to know how to deal satisfactorily with this type of carelessness, which can render the best safety warnings useless.

* * * *

Push-and-Pull Trains

The extending use of diesel, and to some extent, steam railcars in recent years has partly eclipsed the valuable unit for light-traffic branches known as the push-and-pull train. Nevertheless, on sections of the line where traffic is too light to justify a steam train, but beyond the capacity of a steam or diesel coach, this type of unit is of the greatest service, and, as we announced in our issue of January 27, push-and-pull units will shortly be put into service on the L.N.E.R. in the Harrogate and Pateley Bridge, Harrogate and Pilmoor, and Harrogate and Bradford services. For the benefit of those overseas readers who are not familiar with the term, we may say that a push-and-pull train is a specially-equipped set of two or three coaches capable either of being drawn in one direction or propelled with equal safety in the other. When the engine is to propel the train, the driver transfers to a special compartment of the coach at the other end of the train which becomes the foremost coach. This compartment is provided with remote-control equipment enabling the driver to control the engine in the rear. These units have several advantages. The necessity for an engine to run round its train is obviated and shunting movements are reduced, with consequently less interference to other trains, which is particularly advantageous at terminal stations.

* * * *

Nottingham's Varied Industries

Though Nottingham no longer enjoys its former monopoly in lace-making, it has more than made up for the decline in this trade, with which in the public mind its name was once invariably associated, by becoming the centre of a great variety of industries. The manufacture of tobacco is at present the most flourishing, but it is closely followed by the drug, cycle, and hosiery industries. Sugar is made at Nottingham from English-grown beet. Engineers and railwaymen will not have to be reminded that chairs, points, and crossings for railways are also made in this progressive Midland city of over a quarter of a million inhabitants. The ever-growing importance of Nottingham as an industrial centre is reflected in the number of large new buildings, municipal and commercial, now in course of construction in the city. Further reference to these and other interesting sidelights on the present growth of Nottingham and its trade are made in a recent issue of *Quota News*, the journal of the L.M.S.R. Commercial Department.

* * * *

Storage of Locomotive Boilers

A locomotive boiler when stored in dry and clean conditions will show only a minimum of pitting and corrosion; but when allowed to stand with moisture and dirt in it, deterioration becomes rapid. It has been noted that a boiler in service when properly maintained shows less deterioration over a given period than one which is used only occasionally, and in which maintenance is not so good. Indications are in favour of the belief that proper attention given to a boiler when stored will pay dividends when it is again returned to service. When it is decided to lay by locomotives for a reasonably long period, it is good practice to wash and thoroughly clean the boiler on both the fire and water sides, after which

the dome cover and wash-out plugs should be replaced at once. The boiler should then be steamed up to working pressure and blown down as hot as possible, thus permitting the high temperatures to absorb all moisture. It is advisable at the same time to remove a wash-out plug at the lowest point and drain all other points where water might be trapped, replacing the wash-out plugs when it is certain that all water has been removed from the boiler, which will then cool off naturally and remain in this condition indefinitely without deterioration. This advice was contained in a report on the pitting and corrosion of locomotive boilers contributed by Mr. J. P. Becker at a meeting of the Master Boiler Makers' Association held during the autumn in Chicago.

* * * *

Early Signals on the Potsdam Line

An old print, reproduced once more in the press on the occasion of the centenary of the Berlin—Potsdam Railway and representing the Potsdam station in Berlin in the middle of last century, shows an early form of semaphore signal in the station and at an intermediate signalling post in the distance. It is of the kind then known in Germany as a "railway telegraph" (*Bahn-telegraf*), an appliance not used at first as a signal in the sense in which the term has always been used here, that is for giving messages to the drivers, but as a visual telegraph, borrowed from the methods used in early land telegraphy, for sending a message along the line that a train was to be expected and that station staffs and others were to be prepared to receive it. In like manner messages could be sent from post to post asking for assistance or conveying other items of information as the occasion might require. The actual train running was regulated by hand signals, with flags and lamps, on the basis of these messages. For some years the "aspects" shown by these "telegraphs" varied extraordinarily as between the different railways and were described by a well-known writer as "chaotic." Later, as electric telegraphy spread, signals used in the present sense of the word came into existence and the old visual "telegraphs" disappeared.

* * * *

The Eyesores Have It Not

We were confronted the other day with an example of mass advertising, which, on the score of indiscriminate concentration alone, far transcended those colourful enticements to eat, drink and smoke *ad nauseam*, with which one has become familiar on Underground station hoardings and, to a less degree, on the front covers of illustrated weeklies. The *mise-en-scène* was the refreshment room at a junction not 40 miles from London, and in the small amount of mural space available we counted 27 announcements; of the boomed commodities alcoholic and spirituous liquors (15) had a working majority over their rivals—biscuits, chocolates, beef-tea and mineral-water. It is not the general idea so much as the selection of *milieu* at which we cavil, for we feel sure that many with delicate stomachs must have been driven platformwards to await, sad and foodless, their connections, rather than face the unpalatable juxtaposition of cognac and chocolate-creams, or bottled stout and "digestives." If we may be permitted to criticise constructively, why doesn't the railway concerned do the thing appropriately (in every sense) and display the following dietetic encouragement: "Take two triangles of succulent ham enclosed in delicious bread, and make a square meal now"? And we couldn't help noticing, *en mangeant*, that 90 per cent. of our com-munchers on the day in question had, without adventitious exhortation, found the end by this means.

"Square Deal" Developments

NEGOTIATIONS have continued throughout the past week between the railway companies and the various national trading organisations for the purpose of endeavouring to reach some agreement on the question of the companies' application to the Minister of Transport for the removal of the statutory restrictions on the quotation of rates for merchandise traffic. On January 30 they met the Coal Merchants Federation, and next day discussions were resumed with the liaison committee of road haulage interests, with the result that considerable progress was made towards agreement, and, although certain important details remain to be settled, the preparation of a joint memorandum for submission to the council is now in hand. On February 1 further negotiations took place with the mining and iron and steel trades. On February 2 the special committee of the Transport Advisory Council met in public to hear the evidence presented by the British Road Federation, after which the council adjourned to give the railway companies further time for negotiation with the various representative trading bodies. While these talks are enabling a considerable measure of agreement to be achieved, difficulty is being experienced in meeting the requests for adequate protection which are being made by traders in the event of the companies' application being granted, and this is largely responsible for the protracted negotiations. As the companies' claim was sent by the Minister of Transport to the council on December 12 for urgent consideration, it was hoped that its report and recommendations would have been submitted to the Minister before Parliament reassembled this week but, unfortunately, this hope has not been realised. In the meantime the estimated gross receipts of the four main-line companies from railway working are already showing a decline of £957,000 in the first four weeks of 1939 compared with the corresponding period of 1938. This adverse trend, following the decrease of £7,000,000 in 1938 compared with 1937, accentuates the necessity for an early decision.

Although the point is not germane to the present application, press comments from time to time indicate that the size and weight of certain of the heavier goods vehicles are occasioning concern to some members of the public, particularly when trailers are involved. The Road Traffic Act, 1930, restricted to three the number of trailers which may be drawn by a locomotive on a highway, while motor tractors may not haul more than one laden or two unladen vehicles, and heavy motorcars may not draw more than one vehicle. The Motor Vehicles (Construction and Use) Regulations of 1937 and subsequent amendments provide *inter alia* that the overall length of any trailer, excluding the drawgear, must not exceed 22 ft., and the width 7 ft. 6 in.; and also that the total laden weight of a trailer, together with that of any motor tractor, heavy motorcar or motorcar drawing such trailer, must not exceed 22 tons. It is estimated that at the present time there are something like 23,000 trailers in use and, although no information is available as to the tonnage which they convey, or the tonnage conveyed on the very heavy goods vehicles, there is no doubt that it is fairly substantial.

It may be recalled that the Royal Commission on Transport expressed the view that it was not in the national interest to encourage the further diversion of heavy goods traffic from railway to the roads. The Salter Conference in 1932 supported this view, and agreed in recommending that the Minister of Transport should obtain powers to prohibit by regulation the future transfer from railway to road haulage of classes of traffic which are borne by railway and which, having regard to their character and the distance conveyed, are unsuitable for road haulage.

No action was taken by the Minister to implement this recommendation, but it is an interesting speculation as to whether the railway companies would not have been in a substantially better position today if, instead of agreeing to recommend increased licence duties for the heavier types of goods vehicles, they had urged from the outset that the Minister of Transport should issue an Order restricting the maximum laden weight of any road vehicle, with or without trailer, to (say) ten tons. Such a proposal, although presumably now outside the range of practical politics, would, we believe, have secured a substantial measure of support from a fairly large section of the community.

* * * *

Liechtenstein and its Railway

FROM time to time the little independent Principality of Liechtenstein, with about 60 square miles of territory, comes into the news, usually when some tourist photographs its one-man army; but very few persons, probably, were aware until a few days ago that the country was still technically at war with Germany. This arose through Liechtenstein having sent an army of 60 to the aid of its neighbour, Austria, when the latter was at war with Prussia in 1866. The small Principality was overlooked when the peace treaty was drawn up, and it was only at the end of 1938 that Herr Hitler regularised the position by signing a peace treaty between Germany and Liechtenstein. After the break-up of the German Empire in 1806, the Principality was incorporated in the Rhine Confederation, and from 1815 to 1866 formed part of the German Confederation; since that date it has joined no similar union. Liability to military service ceased in 1867 and there has been no army since 1868, but the one survivor (who joined up 71 years ago) says he has never been demobilised.

The only public transport service to Vaduz, the capital, is maintained by a diesel-engined bus, but an important main-line railway traverses the State for four or five miles, forming part of the Arlberg route. After the Austro-Prussian War, the Vorarlberg Railway was formed to provide transport in the Austrian Provinces immediately adjacent to Switzerland, and it opened its main line from Bludenz, through Feldkirch and Bregenz to the German frontier, on July 1, 1872. It is a branch from this line, from Feldkirch to Buchs, that traverses Liechtenstein territory, and this was opened on October 24, 1872. In respect of this, the reigning Prince receives payments said to amount to 1d. a passenger carried, and this income enables the State to be free from external debt and to avoid taxation. Incidentally, the Liechtensteiners are sufficiently well aware of their enviable position to discourage naturalisation, the cost of which is approximately £3,000. Although Liechtenstein has been constitutionally independent since 1866, it was for convenience linked to the general Austrian Administration in pre-war years for purposes of posts, customs, and currency.

The link between Austria and Liechtenstein was further strengthened by the construction of the Arlberg line, which joined the Vorarlberg Railway with the main railway system of Austria on September 20, 1884. The Vorarlberg Railway was acquired by the Austrian State in 1886 and was electrified in connection with the main Arlberg route in sections during the period 1923-1926. The section from Feldkirch to Buchs was opened for electric traction on December 16, 1926. There are three stations or halts on Liechtenstein soil, namely: Schaan-Vaduz, Nendeln, and Schaanwald. Since February, 1921, Liechtenstein has had the Swiss currency, and since January, 1924, has been included in the Swiss Customs Union. The posts (with their own stamps) and telegraphs are now administered

by Switzerland. Since the war, the railway, which is a single-track standard-gauge line, has been worked as part of the Austrian Federal Railways system, and therefore at the time of the *Anschluss* last year it passed into the hands of the Reichsbahn. For many months, therefore, the anomalous position existed that Germany was working a railway built on the soil and for the service of another country with which technically it was at war.

* * *

Speed and Safety

VARIOUS lessons of considerable interest and importance may be drawn from the article appearing on page 174 of this issue, describing the progress made in high speed on the railways of the world during the year 1938, as well as from other facts bearing on high-speed trains that have recently been made public. The first is the extraordinarily rapid growth of fast railway travel. It was not until the autumn of 1932 that the first 70 m.p.h. booking appeared in a railway timetable—the 71.4 m.p.h. of the G.W.R. Cheltenham Flyer from Swindon to Paddington. By the summer of 1938, less than six years later, start-to-stop runs totalling 10,169 miles at over 70 m.p.h. daily were tabled in various parts of the world, and with no deceleration in the interim the fastest run in the world of 1932 took the eightieth place in 1938. Germany, which had not a single mile-a-minute run as late as 1932, had 3,043 miles booked at speeds over 70 m.p.h. from start to stop in 1938, beginning with the introduction of the Flying Hamburger—the *doyen* of streamlined high-speed units—in May, 1933. It was not until 1935 (with one historic exception from Camden to Atlantic City) that runs scheduled at a higher speed than 66 m.p.h. from start to stop began to appear in American timetables; three years later 12,630 miles were booked daily at this speed and 4,415 miles at over 70 m.p.h., while runs at over 60 m.p.h. from start to stop grew from 2,022 miles in 1932 to no less than 48,247 miles in 1938. Most remarkable of all, perhaps, is the fact that Holland, which up till 1937 had no run timed as fast as 60 m.p.h., at one single timetable reorganisation in 1938 produced 3,863 miles so scheduled daily, and relatively to aggregate route mileage has now good grounds for claiming the highest general average of railway travel of any country in the world. In Great Britain the L.M.S.R., whose first run booked at over 60 m.p.h. was found in the May timetables of 1932, has reason for satisfaction in having increased that initial 88½ miles in six years to 6,318 miles by the summer of 1938; similarly the L.N.E.R., from its first experience of timings at over 67 m.p.h. in September, 1935, is to be congratulated on having raised the total at that speed to 1,293 miles, and at over 70 m.p.h. to 653 miles, only two years later.

The statistics given in the article in this issue, however, reveal that for the time being railway speed appears to have reached the bounds set by the present alignment of railway track—with all the improvements that have been effected in the interests of high speed—and the development to date of motive power. Steam, diesel, and electric locomotives have all, during 1938, shown themselves capable of speeds slightly in excess of 120 m.p.h., but the general limits imposed on maximum speeds in ordinary service have now settled down to 100 m.p.h. with diesel propulsion and 90 m.p.h. with steam, with a relaxation of these limits to about 110 m.p.h. and 100 m.p.h. respectively in exceptionally favourable circumstances. These speed capabilities permit the tabling of speeds over long distances, inclusive of stops, of 60 to 65 m.p.h. with steam, and 65 to 75 m.p.h. with diesel power; and, over stretches of line suitable for maximum speed travel, of

start-to-stop runs at 66 to 73 m.p.h. with steam, and 75 to 82 m.p.h. with diesel propulsion. No faster runs appeared in 1938 than the fastest in 1937; in some countries, indeed, there has been a slight but distinct retrogression from the highest levels, as, for example, in Germany, which had 1,709 miles booked from start to stop at over 75 m.p.h. in 1936, but only 1,504 miles in 1937, and 1,275 miles in 1938. In all lower ranges of speed than this there were, however, substantial increases; the inference is that in this and other countries active steps are being taken in the levelling up of railway speeds generally to a higher level, which is greatly in the public interest.

Nevertheless, there is abundant proof that the higher-speed services not only meet a public demand, but are in themselves a paying proposition; the purpose of such services should be to provide facilities not obtainable by the use of ordinary express trains, and so to create traffic, and the experiences in this direction of American railways, as commented on editorially in the Diesel Supplement of our December 23 issue, show that this aim is undoubtedly being realised. Some 70 high-speed luxury trains, in formations from three up to seventeen cars, with diesel propulsion, are now operating in the United States, and certain of them have proved veritable goldmines; the City of San Francisco, operated by the North Western, Union Pacific and Southern Pacific between Chicago and San Francisco six times a month in each direction, is earning a net revenue of roughly 10s. a mile, the daily Denver Zephyr of the Burlington between Chicago and Denver 8s. a mile, and so on. Figures showing a similar tendency have been published by the L.N.E.R. concerning their Silver Jubilee service. Last of all, these great increases in speed, safeguarded as they have been by appropriate improvements in working methods, have not been achieved at any expense in safety. In THE RAILWAY GAZETTE of December 23 some striking figures were quoted concerning railway accidents during 1937 in the United States, which showed that the greatest number occurred at speeds below 10 m.p.h., and that the worst damage had been done in accidents to trains travelling at between 40 and 49 m.p.h. Of five accidents to trains travelling at over 80 m.p.h., three were caused by collision with road vehicles at level crossings, and only one was a derailment; furthermore, so greatly has the technique of rolling stock design and construction advanced that in none of these accidents was a passenger killed, and only one or two cases of injury were reported. Thus the railways, while advancing in speed in a way which is highly creditable, in view of depressing current financial conditions, are at the same time maintaining unimpaired the reputation for safe travel of which they have just reason to be proud.

* * *

Power Frames and Panels

CONSIDERABLE and increasing interest is being taken by signal engineers and operating officers in the respective merits, technical and economic, of the different systems of power signal box equipment that have figured in the more important installations built in this country during the last ten years or so. Certain of the most interesting aspects of the subject were dealt with by Mr. E. W. Challis in his able paper read before the Institution of Railway Signal Engineers on December 21. We are not now referring to the relative advantages and disadvantages of the different systems, electric or electro-pneumatic, of operating lineside functions, but to the actual controlling mechanism manipulated by the signalman, in the design of which some fundamental changes

have gradually been made. The ordinary conventional power frame, which made its appearance here forty years ago or so, with its row—or double row, in the case of the "Crewe" system—of miniature lever handles and mechanical locking, was adopted as a matter of course for a long period, proving a reliable and efficient servant. No real change was made, as far as the signalman was concerned, by the substitution of electric for mechanical interlocking, a step which, often foreshadowed, was certain to be taken when the reliability of electrical equipment proved itself equal to that of any mechanical device. The introduction of the so-called panel system, in which the signalman operates small switch handles, frequently placed on the track diagram itself, to work the points and signals, either individually or on the route setting principle, marked a definite break in the lines on which power working had hitherto developed and the appearance of a new technique in interlocking methods. This remains unaffected by the practice adopted in the large installations of grouping the switches on a desk and not placing them about the diagram, although this step marks a reversion to the older design, as far as mere manipulation is concerned.

Although not in itself an absolutely essential feature of the panel type of construction, the practice arose with it of dispensing altogether with locking mechanism on the actual handles, which were free to move at all times, and transferring all the interlocking features to circuit combinations, effected through relays and other accessories, as this enabled the mechanism handled by the signalman to assume a very compact form. This elimination of all locking on the handles, the merits or otherwise of which we do not now propose to discuss, was envisaged over half a century ago. A pioneer of electric power signalling, Illius A. Timmis, describing apparatus made and tried by him in papers read before the Institutions of Mechanical and Electrical Engineers in 1884 and 1885, said: "If any wrong lever is moved by the signalman in arranging any combination an alarm bell is rung . . ." which, as well as other details he gave, clearly proves that he was thinking of all the handles being free, since otherwise no "wrong lever" could be moved. Other early advocates of electric working, such as Spagnoletti, in 1874, and later Brame in France, appear to have entertained similar notions, though they expressed themselves more vaguely. Timmis even went so far as to say: "Interlocking, *per se*, is a thing which I set my face against entirely." Although his apparatus was crude and uneconomic, solenoids being used for both signals and points, he was very sanguine as to its possibilities, observing, when speaking of Peterborough station and yard, that "you can put one small signal cabin with a Post Office girl to work it and she could manage the whole of these sidings, and two or three times the number, without any difficulty at all!"

Those who advocate the panel system, which has recently been decided on for a large London terminus, point among other things to the fewer signalmen needed to man it, and those who continue to favour the older locking frame type of apparatus emphasise the greater simplicity of the electrical equipment and the robust character of the parts handled by the signalman. Mixed with their discussions on those points are others touching the advantage of locking the handles or leaving them all free, the merits of individual or route setting for the lineside functions, and other features, arguments having a force of their own apart from any other consideration. The economic aspects of the matter are of extreme importance and here again we meet with conflicting views: each engineer, as is only natural, being convinced of the final all-round superiority of the methods he has recommended for any particular set of circumstances. What

the future course of power interlocking development in this country will be it is not easy to foresee with certainty, in view of the differences still prevailing among signal engineers, while the opinions of traffic officers will not be without influence on it. In a few years, however, experience will have enabled accurate comparisons to be made touching all essential points, technical, operating and economic.

It is worthy of note that on the Continent, especially in those countries where the lack of shunting signals, as we understand them, renders the individual lever system almost indispensable, considerable ingenuity has been expended in designing frames in which the levers are grouped in several rows in a very small space. A striking example is seen in the installation at Maastricht, Netherlands Railways, illustrated in our issue for April 17, 1936, page 746, where a frame of 168 handles is only 8 ft. 10 in. long, and mechanical locking is retained.

* * * *

Western Australian Government Railways

A DECIDED improvement in the results of working the Western Australian Government Railways is shown in the report by Mr. J. A. Ellis, Commissioner of Railways, for the year ended June 30, 1938. Gross earnings advanced by £215,813 or 6.23 per cent., and these higher receipts were obtained with an increase of only £89,821, or 3.43 per cent., in working expenses, so that net revenue was £125,992 higher. There was a saving of £20,667 in interest charges, and the final deficit of £19,951 was £146,659 lower than that of the previous year, and substantially lower than in any year since 1927-28, when there was a surplus of £26,671. The net revenue of £967,936 gave a return on capital of 3.70 per cent., against a rate of 3.8299 per cent. charged for interest. In suburban passenger travel there was a decrease of 632,527 journeys for £10,476. The falling off was mainly between Perth and Fremantle, where road facilities are excellent both for private cars and other road vehicles, notwithstanding the greater cheapness of rail travel. Country passenger journeys were 65,843 fewer, with receipts £15,642 lower. First-class passenger receipts amounted to £119,623, a decrease of £6,196, and represented 22.46 per cent. of the total passenger earnings. On the goods side there was a satisfactory increase of 259,213 tons or 9.64 per cent. in paying goods and minerals with an increase in receipts of £222,106 or 9.22 per cent. The greater volume of wheat, timber, and superphosphate handled is mainly responsible for the improvement. In ton-mileage of all classes of paying goods traffic the increase was 44,136,311, or 12.73 per cent. The average haul was 127.67 miles, against 123.92 miles, the increase being due to the greater distance which imported coal, wool, firewood, fruit and vegetables, miscellaneous traffic, and livestock were carried. Earnings per ton-mile declined from 1.76d. to 1.70d. Some railway operating figures are compared in the accompanying table:—

	1936-37	1937-38
Miles open	4,357	4,374
Train-miles	6,235,741	6,534,855
Ton-miles (paying goods and live-stock)	346,776,601	390,912,912
Passengers	12,709,583	12,011,213
Paying goods, tons	2,688,870	2,948,083
Operating ratio, per cent.	75.68	73.68
Passenger receipts	£558,770	£532,652
Goods and mineral receipts	2,409,478	2,631,584
Total earnings	3,462,037	3,677,850
Working expenses	2,620,093	2,709,914
Net revenue	841,944	967,936
Interest charges	1,008,554	987,887
Net loss	166,610	19,951

Of the increased expenditure nearly 50 per cent. was

due to causes over which the administration had no control. Basic wage increases and a new arbitration award were responsible for an additional £37,000, and the cost of native coal added £6,000. Provision was made from working expenses for £100,000 as a repayment to the Treasury for maintenance of railways which was postponed in the depression period 1931-33. In the maintenance of way and works additional re-sleepering and renewals of rails and fastenings accounted for £14,000. Repairs to engine stock were heavier. Passenger train-miles (2,574,420) increased by 137,585 due to the introduction of diesel-electric railcars on various country lines in lieu

of mixed trains and to extra trains to and from Kalgoorlie on account of the new schedule of inter-state trains. Goods train-miles (3,960,435) increased by 161,529 because of heavier wheat and superphosphate traffic, together with additional services necessary to transport general goods on sections where the mixed services were cancelled consequent upon the running of diesel-electric railcars, of which six were placed in service during the year and are providing an efficient and popular service. During the year complete vacuum brake was attached to 24 additional goods vehicles and 81 new stock. The proportion of vehicles completely fitted is now 82.31 per cent.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Locomotive Draught Arrangements

Central Uruguay Railway,
Montevideo,
November, 1938

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—It was interesting to us out here to see from the article in your issue of September 2, that the results obtained both on the Vitry test plant and on the track, after testing a considerable variety of blastpipe and associated arrangements, were substantially the same as those obtained here; we have made a number of similar experiments, confining our tests to locomotives in actual service.

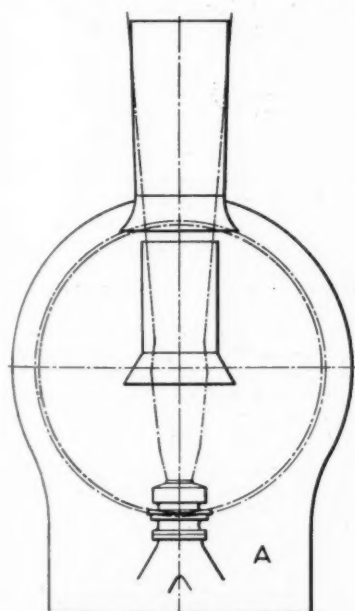
The final conclusions from both series of tests show that the best results, as regards the blastpipe orifice itself, are obtained by the introduction of some method of increasing the periphery of the exhaust steam jet, which in our experiments was accomplished by placing four "nibs" of triangular section, $\frac{3}{8}$ in. wide, on the top and protruding about $\frac{3}{8}$ in. from the edge of the blastpipe cap into the jet of exhaust steam.

Likewise in both cases, a necessary complementary feature consisted of a petticoat-pipe which, besides acting in some degree as an entrainer of the exhaust steam cone and gases entering the petticoat, provided an annular space between

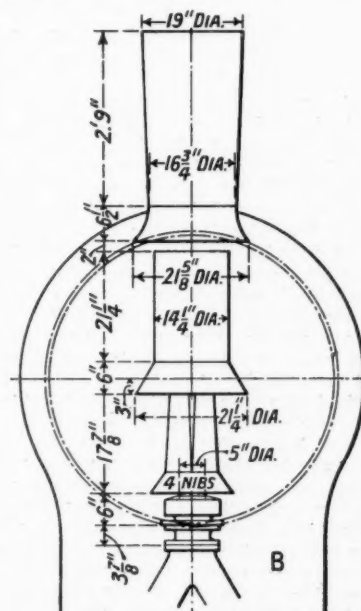
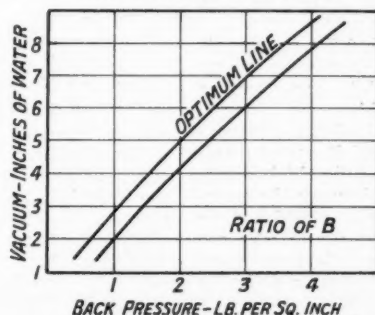
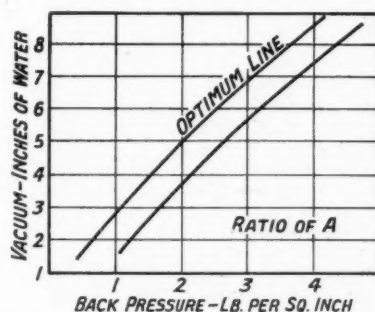
the top of the petticoat and the bottom of the chimney prolongation, in order to give more even draught over the tube area. This feature the writer would like to emphasise, because his experience with an extreme variety of locomotives and service conditions on quite a number of railways has been that a petticoat with space between it and the lower part of the chimney has always given better results than the uninterrupted prolongation of the chimney downwards, which seems to have become considered as "the best ever" in many parts of the world in recent years.

It is noted that in the case of the P.L.M. engine it was found possible to increase by no less than 43 per cent. the net area of the blastpipe orifice, and that of the chimney diameter was increased by 40 per cent. (i.e., 356 mm. to 500 mm.) together with a consequent reduction of 50 per cent. in the back pressure in the cylinders. These results are indeed phenomenal, and whilst not criticising—but on the contrary appreciating—the results now obtained, it appears that such very large improvements can have been obtained only because the previous condition of the engine in regard to back pressure and the like must have been unusually poor.

The statement that the value of the results given would be much enhanced if full details of the test were published, is fully agreed with, because the fundamental ratio of "lb. of steam evaporated per B.T.U.s. consumed" is universally



ALL DIMENSIONS IDENTICAL WITH B BUT WITHOUT KYLALA COWL



WITH KYLALA DIVIDING COWL

Back pressure results with two forms of exhaust arrangement, Central Uruguay Railway

considered the final criterion of good or bad performance, and it seems axiomatic that the final basis of reference for the draughting arrangements of a locomotive is the figure or ratio "inches of vacuum in smokebox/lb. per sq. in. of back pressure in the exhaust"; an optimum ratio being considered to be of the order of $2\frac{1}{2}$ in. of vacuum for 1 lb. of back pressure ranging, to $8\frac{1}{2}$ in. of vacuum for 4 lb. In practice, 2 in. vacuum for 1 lb. back pressure, rising to $7\frac{1}{4}$ in. for 4 lb. back pressure, has been obtained with draughting arrangements as described above, and used here—examples being shown in the appended diagram—and it would be interesting to know the corresponding ratios which were obtained on the P.L.M. engines.

Yours, &c.,

P. C. DEWHURST
[Chief Mechanical Engineer]

The "Square Deal" Campaign

70, Antrim Mansions, N.W.3

January 30

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I was very interested in the remarks on "The Square Deal" of the triumvirate, Messrs. Adams, Johnston, and Watkin, in last week's issue of THE RAILWAY GAZETTE, particularly as regards timetables, which badly need revision along the lines suggested. Prior to the war I happened to be a member of Sir Henry (then Mr.) Thornton's committee for improving the Great Eastern Railway train service, and I recall that our endeavours included a more regular spacing of main-line trains, better and faster cross-country connections, better Sunday services, and a more normalised locomotive working. This we managed fairly well, I think, but the war put an end to our schemes and my service with the railway.

I was, however, very interested to read in THE RAILWAY GAZETTE for July 22, 1932, in a leader referring to Sir Henry Thornton, of the "wonderful revised train services that Sir Henry inaugurated just before the war which enabled one to travel about the Eastern Counties so conveniently, the like of which we never had before and are never likely to have again," and as a frequent traveller in East Anglia I would ask for its restoration.

Yours truly,

J. L. B. SAMS

First and Third

London, E.C., January 17

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I should be greatly obliged if, with your help, a point concerning railway passengers' rights could be determined. I have occasion to travel daily over a section of main line serving London, operated by steam and electric services, on which non-corridor compartment stock is employed. Free use is made of the first class accommodation by passengers holding third class tickets, mostly regular travellers with "seasons."

It occasionally happens that genuine first class passengers have to stand or may indeed be crowded out altogether, and on inquiry I was informed by a railway officer, not a member of the uniformed staff, that, provided these third class passengers or any of them have first made sure that no room remains in their own class of carriage, they are then entitled to travel first; and further that the company's stipulation that there is no undertaking to convey passengers by any particular train does not apply whilst room can be found irrespective of the class of ticket held.

As I view the matter, this is merely transferring a grievance from one class of passenger to another, and it seems manifestly unfair that those who have paid at the higher rate should be deprived of a seat or left behind because the seats, or space, otherwise available to them and to which they have a prior right, have been usurped by others who are travelling more cheaply. In other words, it does not seem fair that the company should extricate itself from a difficulty at the expense of one section of its customers.

Yours faithfully,

C. CLARKSON

French Locomotive Veterans

58, rue de Courcelles,

Paris

December 22, 1938

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The 2-4-0 illustrated on page 1006 of THE RAILWAY GAZETTE for December 9, 1938, belonged to the former Midi Railway. Formerly this engine had a plain chimney. The balloon stack was added when they were used in the Landes. Engines of this type worked the trains from Bayonne to Cambo and St. Jean Pied du Port until 1918.

The oldest locomotive in France is Midi locomotive No. 312 of Engerth 0-6-4 tank type built in 1856, modified only by the fitting of a domed boiler, and running between Mende and La Bastide in the Cevennes. In June, 1938, the engine was still in active service.

The ruling grade is 1 in 38 and the curves attain 175 m. ($8\frac{1}{2}$ ch.) radius. The engines burn up to 20 kg. of coal per km. (70 lb. per mile) hauling loads of 100 tons or so at 15-16 m.p.h. on the grade. With one of them I attained a speed of 60 km.p.h. (37 m.p.h.) on level track hauling 100 tons.

Yours faithfully,

BARON G. VUILLET

Merrywood Corner,

Thakeham,

Sussex

December 22, 1938

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I was interested to see Mr. Richard Pennoyer's letter in THE RAILWAY GAZETTE for December 9. The locomotive he saw was one of a series of 80 built by Gouin & Cie for the Midi Railway in the years 1854-5, numbered 101 to 180. Their leading dimensions were as follow:—

2 cylinders	...	...	...	...	16.15 in. x 22.06 in.
Driver wheels	...	...	...	...	5 ft. 6.9 in. dia.
Pressure	...	...	...	...	120.9 lb.
Tractive effort, 85 per cent.	...	...	...	...	8,790 lb.
Heating surface:					
Firebox	...	...	...	...	75.3 sq. ft.
Tubes	...	...	...	...	925.7 "
Total	...	...	...	...	1,001 "
Grate area	...	...	...	...	13.75 "
Weights:					
Total	...	...	...	...	27.8 tons
Adhesive	...	...	...	...	20.0 "
With tender	...	...	...	...	48.8 "

Some time during the last century a number of these were rebuilt as 2-4-0 tank engines for shunting work—the numbers being 113-148. I have several times seen these locomotives when visiting the South of France at Bayonne, and photographed No. 178 at Bayonne sheds in 1923—it had a normal chimney and I have never actually seen one with spark arrester chimney. These machines were originally used for general passenger traffic and were contemporaneous with the 2-2-2 express engines of series 1-40 built also by Gouin in 1856-7. These were somewhat similar in general dimensions but had larger boilers and 6 ft. 10.2 in. wheels.

Yours faithfully,

A. N. L. MACLACHLAN

[There seems to be some doubt whether the whole batch of Gouin 2-4-0 locomotives (Nos. 101-180) was built in 1854-5. If this is the case, the engine illustrated by Mr. Pennoyer in our December 9 issue was older than the 0-6-4 quoted by Baron Vuillet above. Baron Vuillet, however, says that the higher-numbered engines in the series differ fundamentally from No. 101 to 112 and 113 to 148, and suggests either that Nos. 148-180 were of later construction, or were rebuilds of preceding engines.—Ed. R.G.]

OUR FOREIGN VISITORS IN 1938.—With the issue by the Home Office of the official travel figures for December last, the Travel & Industrial Development Association is able to give a complete statement of the number of visitors to the United Kingdom from other countries during 1938. While the figures show, not unexpectedly, a decrease compared with 1937, they are well up both on 1935 (the year of King George V's Silver Jubilee), and the peak year of 1930. The figures for 1938 were: holiday visitors, 248,685; business visitors, 108,570; total 357,255.

PUBLICATIONS RECEIVED

One Hundred Questions and Answers About Coal. London: Philip Gee, 5, New Court, Lincoln's Inn, W.C.2. 7½ in. × 4½ in. 132 pp. Paper covers. Price 3d. net.—Eleven chapters and an index make up this interesting and informative little book, to which Sir Evan Williams, Bart., President of the Mining Association of Great Britain, contributes a foreword. The questions fall into groups under headings such as "Amalgamation, Compulsory and Voluntary," and "Nationalisation." The object of the book is, in Sir Evan's own words, "to furnish concise, accurate, and up-to-date answers to some of the questions which are most frequently asked about the mining industry." It forms a valuable source of information for writers and lecturers who wish to describe any of the manifold aspects of one of our greatest industries.

Manual of Electrical Undertakings and Directory of Officials. Volume 41. ("Garcke's Manual"). Edited by Frederick C. Garrett. London: Electrical Press Limited, 13/16, Fisher Street, Southampton Row, W.C.1. 8½ in. × 5½ in. × 2½ in. 1,880 pp. + cxvii pp. Price 37s. 6d. net.—In its special field this annual work of reference maintains a very distinctive place as the court of appeal whenever any questions arise about the electrical industry. As usual, all sections of the work have been fully revised and brought up to date, and the accounts and statistics of the various supply undertakings are for the most part in respect of the years 1937-38. The work entailed in this revision must have been enormous, and to have such a compilation available in compact form must be worth far more than the price of the volume to anyone in touch with electrical engineering. Every supply undertaking in Great Britain and Ireland is recorded in the first section of the book, and as far as possible every factor affecting the respective undertakings is given in full. These data include the extent of the authorised area, the population and rateable value, the system of operation employed, and the plant installed. Then follow names and addresses of responsible officers, capital and revenue accounts, supply statistics, tariffs in force, and finally a comparative table giving revenue, working costs, output, and total connections for the past five years. Similar particulars, so far as they are applicable, are given in respect of tramway systems, power companies, and railways, as well as of the supply undertakings. Section 2 gives useful data respecting all the principal British electrical manufacturing companies, including some others closely associated with the industry such as Babcock & Wilcox Limited. Section 3 is concerned with Dominion and Colonial electrical undertakings arranged geographically in sub-sections as follow: (a) Canada, America, and West Indies; (b) Africa; (c) Australia and New Zealand; and

(d) Europe and Asia. In section 4 there is a directory of electrical contractors in the United Kingdom, arranged in towns, and in section 5 a directory of directors and officials connected with the electrical industry. Finally, there is a buyers' guide, classifying advertisers in the manual—a surprisingly comprehensive assembly.

Locomotive Cyclopedia of American Practice. Tenth edition—1938. New York: Simmons-Boardman Publishing Corporation, 30, Church Street. 12 in. × 8½ in. × 2 in. 1,232 pp. Fully illustrated. Price (buckram) \$5.00, (leather) \$7.00 net.—This, the tenth edition of a very comprehensive work dealing with locomotive engineering, fully maintains the excellence and usefulness of the preceding editions. Its compilers are in every way qualified for the somewhat heavy task of producing a work of these proportions and comprehensiveness, and they have the valuable co-operation of advisory committees appointed by the Mechanical Division of the Association of American Railroads. A fund of information is available on locomotives and their equipment; railway shop and running shed appliances of all kinds; and in addition there are to be found in the 1,232 pages of the book data on standard practice and official specifications which in combination form a highly valuable portion of the volume.

The large number of illustrations of complete locomotives and their component parts cover all the principal types in use on the American railways, and include the latest streamlined designs. In all cases, the half-tone illustrations and drawings are accompanied by the leading particulars of the locomotives concerned. Not the least illuminating sections of the descriptive matter are those which deal with the materials used in modern American locomotive practice, and the methods of dealing both with them and the component parts in the manufacturing and assembly stages. The work in effect provides an extensive epitome of locomotive design and construction. There is not much, if indeed anything, that students of American locomotive practice could remain in any doubt upon with this volume in their possession.

Electric and diesel locomotives are treated in separate sections, and here again the components are in some cases separately illustrated and described. At the end of the Shops section there has been added a list of references to articles and reports of shop layout, operation and practice, and this is sub-divided in the order corresponding to that in which the chapters appear in this section. The reference list provides a valuable guide to supplementary information on the several chapters. The work is one which we can cordially recommend because of the value and comprehensive information it affords, whilst the general style of production and clearness of the text

and illustrations go far towards increasing the high standard of the production as a whole.

L.M.S.R. Tide Tables.—The London Midland & Scottish Railway Company has now issued its tide tables for 1939 in connection with the ports at Garston (Lancashire), Barrow, Heysham, Fleetwood, Goole, Grangemouth, and Ayr and Troon; these may be obtained free from: Messrs. R. D. Roberts, Dock Superintendent, Garston Docks; F. K. Rogers, District Goods, Passenger and Docks Manager, Barrow-in-Furness (Barrow Docks and Heysham Harbour); J. Wood, Goods and Docks Superintendent, Fleetwood; E. Davies, Superintendent, Goole; A. Trotter, Docks and Traffic Superintendent, Grangemouth Docks; R. Marshall, District Goods and Passenger Manager, Ayr. They may also be secured from the Acting Chief Commercial Manager, Euston House, London, N.W.1; and from Mr. W. Yeaman, Commercial Manager (Scotland), Central station, Glasgow. The booklets are bound in handy size for the pocket, and apart from the tides, depth of water, phases of the moon, and other general information, each brochure contains a plan of the port.

Machine Tools.—Churchill-Redman Limited, the well-known firm manufacturing high-grade machine tools, has sent us three well-produced booklets describing and illustrating (photographically and diagrammatically) various patterns of lathes and shaping machines. The design of C-R Shapers (Bulletin No. C.T.4) is heavy and powerful, with liberal bearing surfaces and correct distribution of metal to commend them for the most severe and exacting duties. Three sizes—18-, 24-, and 32-in. stroke—can be furnished, fitted with plain or fully universal tables equipped with Vernier attachment. Detailed tables of dimensions are given in every case. Distinctive features of these machines are the built-in power rapid traverse which operates in the direction opposite to the feed set, and the cam feed mechanism which operates during the return stroke of the ram; a direct reading feed dial is fitted having 11 changes from 0.010 to 0.170 in. N.M. Lathes (Bulletin No. N.M.5) are built in six sizes: heavy-duty models with 7-, 9-, 11-, 13-, and 15-in. centres, and a medium-duty model with 9-in. centres. The use of semi-steel castings, centralised lubrication systems, and grouping of controls, are factors which ensure long life to the machines, accurately machined work and maximum output. C-R helical geared precision lathes (Bulletin No. C.L.8) are supplied in two sizes—12- and 16-in. swing—and both have 16-speed completely Timkenised headstocks with a very wide range of spindle speeds, and finger-tip control for all movements. The hardened helical gears ensure smooth, quiet, and continuous transmission of power, giving longer life to the machine and a superior finish to work. Copies of these booklets can be obtained from the manufacturers at Parkinson Lane, Halifax.

THE SCRAP HEAP

He was up from the provinces and mumbled so indistinctly that the booking clerk at Covent Garden underground station failed to catch what he said.

"A threepenny one?" inquired the clerk, making a guess at it.

"Yes, please," answered the stranger, who was given a ticket.

He returned five minutes later and asked for his money back. The booking clerk demanded an explanation.

"I'm sorry," said the man, "but I thought this was a picture palace!"

* * *

A "SQUARE DEAL" IN 1840

In 1840 "a petition of common carriers and others interested in the conveyance of goods by railway, for free competition" was presented to the House of Commons, and referred to the Select Committee on Railways. In the same year petitions were presented from parties connected with the Leadenhall and Newgate Markets, praying "for a free competition in the conveyance of goods and cattle." There was also one from the Sheffield & Rotherham Railway Company, praying "for relief from the Government

tax on railway passengers." All of these were referred to the Select Committee.

* * *

Wisecracks at the P.W.I. Dinner

Mr. J. C. L. TRAIN

I met Mr. Carpmal last week, and when I asked him what I should say about him, he replied, "Well, you could say that you don't know anything against me," and after careful consideration, I have decided that I might go as far as that.

ON TALL AND SHORT MEN

During the war, there was a gathering of very tall officers, one of whom was so dense that the others noticed it!

Size is no indication of a man's importance, and apparently the same applies in the case of railway companies, because in his book Mr. Bradshaw puts the Great Western first, and the L.M.S. a poor third.

The road to success is crowded with ladies pushing their husbands along.

Deck games were being organised aboard an ocean-going liner, and a man leaning over the rail was asked if he

would pull for the married men in a tug-o'-war against the single men. He replied, "I'm not married; it's seasickness makes me look like this."

Mr. W. K. WALLACE

It is usual to say of the best weddings that the presents were numerous and costly. Much the same might be said of our guests tonight.

It is said that the L.N.E.R. represents the drier side of Britain. I understand that claim is a personal rather than a climatic one.

SIR RALPH WEDGWOOD

Our meal has possessed all the qualities of good permanent way. It was solid; it was comfortable; it was sleep-inducing. But it was not bolted!

* * *

The new Underground station, Acacia (from Acacia Road) is blocked from precedence in the railway list by the strong tribe of the Abers, including Aberdeen; and in the London area it yields to Abbey Wood, that suburb with a very unsuburban name. It is pleasant, anyhow, to have a new flower name on the London map, even though the plant 'belongs to the family Leguminosae and the sub-family Mimoseae.'—"Observer" in "The Observer."

One Hundred Years Ago

Extracts from the February, 1839, issue of "The Railway Magazine" (afterwards "Herapath's Railway Journal") and the oldest constituent of THE RAILWAY GAZETTE

"Quarterly Review" on Railways.—Sir,—As public attention has been a good deal called to an article in the last number of the *Quarterly Review* on the subject of railways, said to be the production of Sir Francis Head, it is important to ascertain what degree of authority should be allowed to a writer who is bold enough to propose the transference of all the railways of the country into the hands of Government, and the establishment of a board of management, with snug places for *ex-commissioners*. Now, to judge of the weight due to the reviewer's arguments from the correctness of his facts, we may at once say, that these are absolutely worse than worthless, being wildly exaggerated, and in all respects delusive.—From a letter by R. R. to the Editor of "The Railway Magazine."

Railway Tolls.—The Grand Junction Company pay the Liverpool and Manchester Company four-fifths of a penny per passenger per mile, and one penny three-fifths per ton per mile for goods, for the bare use of the railroad, the expenses of locomotive power and carriages falling on the Grand Junction Company, and all expenses of repairs of the road and watching it, on the Liverpool and Manchester. These prices are from the letter of the chairman of the Grand Junction to the

chairman of the Manchester and Birmingham Company, but we have heard it said, the former toll is only three-eighths of a penny per passenger per mile.

Eton College, versus the Great Western Railway.—By the Act of this company they are not permitted to make a station or new roads within, we believe, 3 miles of the nearest point to the college; the company, however, take up and set down passengers by the side of a road leading to Salt-hill, and have a booking-office at a public-house in the village. The heads of Eton College considered this an infringement of the Act, and endeavoured to obtain an injunction to prevent it. In giving judgment, the Lord Chancellor observed, the company were prohibited from forming new roads communicating with the railway within a certain distance of the college, but the road by which persons were now enabled to get to and from the railway was an old road. It was in no sense of the word a station, it was simply a pathway to the railroad. The public-house in which the company had a booking-office was not built on their ground, and he could find nothing in the statute to prevent them from making a communication to the railway by means of the old road. The college doubtless intended to prevent what had

been done, but they had not succeeded in their object. There was no evidence of anything like private contract between the college and the company, otherwise it might have been deserving of consideration how far a breach had been committed. The application for an injunction must be refused, and with costs, it being, in effect, a case which had been brought a second time before the Court.

New Railway System.—A plan is said to be in agitation to establish tram-roads by the side of turnpike-roads, capable of competing, for all ordinary purposes, with railroads, at an infinitely smaller expense as well as risk. The plan is said to be at this time in operation at Llanelly, in Wales. The cost, it is said, would be £1,350 per mile. Thus tram-roads might have been made to Birmingham for £146,000 while the railway has cost £6,000,000.—*Morning Paper*.

[This plan was originally suggested in the present volume of our magazine, p. 454, by John Rooke, Esq., the author of "Geology as a Science applied to Engineering."]

Branding Junction Railway.—That portion of the line commencing at the Newcastle and Carlisle Railway station, at the Redheugh, was opened by the directors of both lines, in company with the Mayor of Newcastle (John Fife, Esq.), &c. From the Redheugh to the Windmill Hills is worked by a stationary engine of 60-horse power.—*Newcastle Chronicle*.

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

NEW SOUTH WALES

New Locomotives and Trains Ordered

Although additions have been made in comparatively recent times to the stock of goods engines in service in New South Wales, no passenger engines have been constructed since 1926. As mentioned in previous issues passenger journeys in this State have in the last three years successfully established records, and the administration has found it increasingly difficult, with its present locomotive stock, to maintain the frequent and accelerated services given. Consequently, it has been decided to build new passenger locomotives and an initial contract for five Pacific type engines has been let to a local firm, the Clyde Engineering Co. Ltd. Cast frames and cylinders, Walschaert's valve gear, belpaire boilers with 240 lb. per sq. in. pressure, and modified streamlining will be incorporated in the design. Tractive force will be approximately 36,000 lb.

Five Tourist Trains

The Waddington Body Co. Ltd. has received an order to supply the Railway Department with 35 tourist cars of steel construction, to form five new tourist trains. Anti-telescopic ends will be incorporated and a forced ventilating system installed. The cars will be built with central aisles, the first class being finished in Queensland maple and the second class in silky oak. The floors will have rubber coverings, and in the first class, carpets will be superimposed on the rubber. Dwarf partitions will make each seat semi-private and all metal finishings will be chromium plated.

[Brief reference to these orders was made in our Contracts and Tenders columns on January 20.—E.D. R.G.]

WESTERN AUSTRALIA

Summer Excursion Fares

In previous years it has been the practice to introduce excursion fares for limited periods at Christmas and Easter, with a fairly long break in between these two excursion periods. This year, with a view to attracting additional travel during the summer months, when seaside holiday resorts make their greatest appeal, additional excursions have been introduced, and the period of operation will continue from Christmas until Easter without a break. The following are among them:—

Anywhere to anywhere.—These tickets will be issued daily from any station to any other station at single fare plus one-half for the return journey, and will provide an excursion fare from every station for over four months.

Cheap week-end excursion.—For those who cannot spare the time for a pro-

longed holiday, a special week-end fare has been provided. Such tickets will be issued each Friday, Saturday, and Sunday from any station to any other station at single fare and one-third. These tickets may be issued for holiday or business purposes, but the return journey must be made by a train leaving the destination not later than the Monday following the date of issue.

Seaside and tourist resorts.—To cater for the popularity of seaside resorts, excursion tickets will be issued daily from all stations to these resorts at single fare and one-third. This excursion is intended to cater principally for inland towns situated long distances from the seaboard, and minimum fares of 60s. first class and 37s. 6d. second class apply. The tickets have an availability of three months from date of issue.

Special cheap fares from metropolitan-suburban area.—To meet the heavy travel demands from the Perth metropolitan-suburban area, special cheap tickets are issued daily to the principal southern and south-western tourist resorts at fares which work out at approximately 1d. a mile for first class and 3d. a mile second class, with availability of from three to six weeks.

Inland women's and children's excursion.—To provide relief from the trying conditions of an inland summer, special cheap fares will be available for women and children residing in those parts. These fares cover travel to specified seaside resorts and are only available by certain specified trains. The tickets are available for return up to two months from date of issue.

SOUTH AFRICA

Record Weekly Earnings

The weekly earnings of the South African Railways reached a new high level recently when £714,588 was earned during the week ended December 10, 1938, all classes of traffic contributing towards the improvement. The previous record was £713,718, in the week ended October 2, 1937.

Voortrekker Centenary Train Arrangements

In connection with the Voortrekker centenary celebrations and the laying of the foundation stone of the Voortrekker Monument at Pretoria on Dingaan's Day—December 16, 1938—the 100th anniversary of the defeat of the Zulu Chief Dingaan at the battle of Blood River—the resources of the South African Railways were severely taxed in coping with an unprecedented movement of long-distance passenger traffic. A feature of the celebrations, which was the biggest public function ever held in South Africa, was the large number of participants who proceeded by train to Pretoria in organised parties, no fewer than 10,770 persons being conveyed in this way, the majority being transported over considerable distances. Included in this

number were over 3,000 mounted burghers accompanied by their horses, the transportation of which involved the use of some 500 livestock wagons.

Apart from the organised parties, thousands of visitors travelled to Pretoria by train in the usual way, necessitating the strengthening and duplication of ordinary trains. Coinciding with the closing of the schools and the summer excursion period, an unprecedented demand for engine power and coaching stock was occasioned while the resources of the Catering Department were taxed to the utmost in providing meals for the travelling multitudes. Many of the special trains proceeding to and from the function were occupied entirely by juveniles, the feeding of whom represented a problem out of the ordinary, as some of the trains conveyed up to 425 children. Although each of the juvenile trains was equipped with a twin dining car and special meals at a concessionary price of 1s. 6d. each were provided, it was necessary in some cases to have as many as seven sittings for each meal. This meant that breakfast began at 6.0 a.m. and ended about 10.0 a.m., with a similar prolongation of other meals.

ARGENTINA

Summer Train Services, Central Argentine Railway

With the advent of the summer holiday season, most of the railways have augmented and accelerated their services to the various tourist resorts.

The Central Argentine air-conditioned, daylight express El Cordobés equipped with semi-Pullman seats, which runs between Buenos Aires, Rosario, and Córdoba, now runs 3 times a week instead of twice, as formerly, the time for the journey of 430 miles having been reduced from 9½ to 9 hr. The train leaves Buenos Aires on Tuesdays, Thursdays, and Saturdays at 8.15 a.m., arriving at Córdoba at 5.15 p.m., connecting there with the State Railway to the hills. The train leaves Córdoba on Wednesdays, Fridays, and Sundays at 2.15 p.m., connecting with the State Railway service from the hills, and arriving at Buenos Aires at 11.15 p.m.

The daylight express service by El Serrano has also been augmented from twice to three times a week, leaving Buenos Aires on Mondays, Wednesdays, and Fridays at 7 a.m., arriving at Córdoba at 5.15 p.m. The journey in the reverse direction is made on Tuesdays, Thursdays, and Saturdays with connections from the hills, leaving Córdoba at 12.50 p.m., and arriving at Buenos Aires at 10.50 p.m. There are five intermediate stops on both the outward and the return journey. From January 3 to February 28, there will be an additional service by this train, leaving Buenos Aires on Tuesdays, Thursdays, and Saturdays, and returning from Córdoba on Wednesdays, Fridays,

and Sundays, observing the same timetable and itinerary.

B.A.G.S.R.

The new summer service between Buenos Aires and San Carlos de Bariloche (Lake Nahuel Huapi), came into force on December 15, although it will not be in full operation until after the New Year. From December 15 to January 1, the service will consist of three trains weekly, leaving Buenos Aires on Mondays, Thursdays, and Fridays. Monday's train (with through sleeping coaches) leaves Plaza Constitución at 8.25 p.m., arriving at Bariloche at 4.45 p.m. on Wednesdays. Thursday's train marks an important innovation, as for the first time the journey over the State Railways from Patagones to Bariloche will be made by a fast diesel train. The steam express (with sleeping cars only), leaves Buenos Aires at 4.50 p.m., arriving at Patagones next morning at 8.35 a.m. Here the passengers transfer to the diesel train, leaving at 9 a.m., and arriving at Bariloche at 8.30 the same night, thus shortening the journey by a night. The third train El Tronador, steam throughout, with first and second class passengers and through sleeping cars, leaves Buenos Aires on Fridays at 7.35 p.m., and arrives at Bariloche on Sundays at 9.45 a.m.

The corresponding return trains are as follow:—The ordinary train, leaving Bariloche on Thursdays at 2.30 p.m., and arriving at Buenos Aires on Saturdays at 9.45 a.m. The Tronador, leaving Bariloche on Mondays at 9.30 p.m., and arriving at Buenos Aires on Wednesdays at 11 a.m. The diesel train, leaving Bariloche on Sundays at 9 a.m., and arriving at 8.30 p.m. at Patagones, where the passengers transfer to the B.A.G.S.R. steam express, which arrives at Buenos Aires on Mondays at 2.05 p.m.

From January 1, an additional train will be incorporated into the service, connecting with the State Railways diesel train at Patagones and from January 2, a second train El Tronador, will be added. These trains will return from Bariloche on Wednesdays (diesel to Patagones, and thence steam to Buenos Aires), and Fridays (steam direct to Buenos Aires). The first class return fare from Buenos Aires to Bariloche (1,089 miles) is \$185.35 paper; bed tickets: \$20.60 each way.

B.A.P.R.

As last year, there are three trains to and from Chile each week, connecting with the Transandine and Chilean State Railways, leaving Buenos Aires on Sundays, Wednesdays, and Fridays at 11.30 a.m., and arriving at Valparaiso and Santiago on the following day before midnight. The return trains will leave Valparaiso and Santiago at 8 p.m. on the same days, arriving at Buenos Aires at 4.30 p.m. on Tuesdays, Fridays, and Sundays.

The day express El Cuyano, between Buenos Aires and Mendoza, with Pullman and dining cars and first and

second class coaches, now runs 6 times weekly in each direction, leaving Buenos Aires at 7.30 a.m. (excepting Wednesdays), and arriving at Mendoza at 10 p.m. The return trains leave Mendoza daily at 8 a.m. (excepting Thursdays), and arrive at Buenos Aires at 10.20 p.m. The running time for this train for the journey of 1,063 km. has again been reduced by 45 min. on the outward journey and 35 min. on the return journey. The service between Mendoza and San Juan is maintained by diesel railcars in combination with El Cuyano.

At Achiras, in the Province of Córdoba, the B.A.P.R. has installed experimentally a holiday camp, consisting of canvas tents, fully equipped, each with accommodation for four persons, and a large open dining hall with tiled roof, which also serves the purpose of a recreation room. The amenities include a swimming pool, and facilities for basket-ball, bowls, and other sports. Coupons, costing \$80.00 a head for a stay of 10 days, are issued, inclusive of first class return ticket and transport between Achiras station and the camp. Holders of coupons wishing to extend their stay to a fortnight can do so by paying an additional \$3.00 a day.

State Railway Diesel Services to Nahuel Huapi

The above services were inaugurated on December 15, when the first of these trains made the run from Buenos Aires in 11 hr. 30 min. less than the ordinary timings.

CANADA

C.N.R. Works in Montreal

It is now possible to give further particulars regarding the resumption of work on the C.N.R. new station and approach from Victoria bridge, Montreal.* The present scheme embodies a three-year plan to restart the work, which will proceed by stages as conditions warrant, and advantage will be taken of favourable circumstances from time to time. Some \$3,000,000 to \$4,000,000 will be spent this year and about \$12,500,000 during the next three years. A connection will be constructed between the present main line at St. Charles and the viaduct approach to the bridge, as well as the approach to the new central station. The Federal Government is contributing to the cost of the work, as it will provide valuable relief of unemployment; the steel trade will also benefit materially. Tenders have already been invited for some of the preliminary works.

C.P.R. Traffic Receipts in 1938

Traffic receipts of the Canadian Pacific Railway for year 1938 amounted to \$142,258,000, as compared with \$145,085,000 in 1937, being a decrease of \$2,827,000, or 1.9 per cent. These

* Already announced in these columns of our issue of January 20.—Ed. R.G.

totals are based on periodical reports issued four times a month by the company. The past year was marked by a modest increase in January, followed by six months of unbroken decreases, succeeded, in turn, by four months of increases, with the final month of the year again showing a decrease. Following are monthly comparative traffic receipt figures:—

	1938	1937	Difference
January ..	10,315,000	10,194,000	+ 121,000
February ..	9,383,000	9,724,000	- 341,000
March ..	10,468,000	11,748,000	- 1,280,000
April ..	10,413,000	11,870,000	- 1,457,000
May ..	10,562,000	11,834,000	- 1,272,000
June ..	10,145,000	11,419,000	- 1,274,000
July ..	11,090,000	12,042,000	- 952,000
August ..	12,184,000	11,915,000	+ 269,000
September ..	15,785,000	14,355,000	+ 1,430,000
October ..	16,395,000	14,729,000	+ 2,206,000
November ..	13,030,000	12,993,000	+ 37,000
December ..	11,948,000	12,262,000	- 314,000
Year ..	142,258,000	145,085,000	- 2,827,000

INDIA

Long Engine Runs

In keeping with the recommendations of the Pope Economy Committee, many of the Indian railways have been experimenting with longer engine runs. The latest test run in this connection was made from Howrah (Calcutta) to Moghalsarai, on the East Indian Railway, on December 5. Working the Calcutta—Delhi express in each direction, a locomotive of the HPS class (4-6-0 type) ran the 418 miles—836-mile round trip—unchanged, with a change of crews at Gomoh and a load of 450 tons behind the tender.

With a view to instituting such runs in everyday service, arrangements are, it is understood, being made to concentrate a larger number of mail and express engines at Moghalsarai, from which centre they will work in four directions radially to Ghaziabad (close to Delhi), Saharampur (where also connection is made with the N.W.R.), Calcutta via the main line, and also via the Grand Chord line, all distances of over 400 miles. Work has already begun to provide additional running shed accommodation and quarters at Moghalsarai, but will take about a year.

Acceleration of Passenger Services

Further decisions reached by the Railway Board on the recommendations of the Wedgwood Committee include the acceleration of passenger trains and the initiation of advertising campaigns, particularly in the vernacular press, to attract additional third class passengers. It is gathered that the railway administrations have been asked to place on special duty selected traffic officers to examine the question of acceleration of passenger trains and other important matters relating to the expeditious movement of traffic. Further reduction of the length and number of halts at stations for traffic, watering, and engine changing purposes, and the general speeding-up of passenger services on main and branch lines are points to which the attention of the special officers will be particularly

directed in order to secure both commercial and operating advantages.

The special traffic officers will also be expected to find ways and means of accelerating goods movement. The possibilities in this direction, however, are somewhat limited by the fact that much of the detention to goods trains is due to the prevalence of long lengths of single line which are bound to cause considerable delays to such trains for crossing purposes, and in giving precedence to passenger, express, and mail trains, particularly on sections of high traffic density.

Press Campaign

The Railway Board has decided to increase advertising in the vernacular press and to conduct a well-planned campaign of continuous advertising in the press in respect of lower class travel, with particular reference to places of pilgrimage and of historical interest. Such a campaign has already been inaugurated as an experimental measure on the Eastern Bengal and East Indian Railways and a sum of about Rs. 45,000 (£3,375) has been provided for expenditure in the current year. It is also likely that the funds made available by the discontinuance of the *Indian State Railways Magazine* will be diverted to publicity work in connection with lower class travel.

Expert advice has been taken on the subject of trade advertising at stations. Commercial opinion, generally, favours the view that better value can be obtained from other forms of advertising than are practicable on railway premises. It thus appears that the potential profits from the carefully planned campaign among the trading communities in India suggested by the Wedgwood Committee are not regarded as sufficiently attractive to justify further expenditure on this account. Railways have, however, been asked to give special attention to this matter and to endeavour to improve net revenues derivable from this source.

New Line for Jaipur

The Railway Board has sanctioned the construction by the agency of the Jaipur Government of a line of railway on the metre gauge from Junjhunu to Loharu, a distance of 36.62 miles. The line will be known as the Jhunjhunu-Loharu Railway.

DENMARK

Modern Rolling Stock

Modernisation of the passenger rolling stock is continuing; new all-steel coaches are being steadily acquired, and henceforth four-wheeled compartment stock will be entirely banished from all main lines and be used on branch lines only at times of pressure. All first class stock on main-line trains is now modern all-steel stock built since 1935, with the exception of some composite coaches of older semi-steel

construction. Old first class bogie stock is being rebuilt as centre-corridor general-class stock, and old bogie compartment coaches are also being rebuilt as centre-corridor stock.

At present 12 new first class and 8 general class all-steel coaches are in process of delivery from Scandia of Randers, and 12 composite coaches and 6 mail vans have recently been ordered from the same firm, which will also shortly supply 4 new all-steel trailers for the Nordpilen services; these trailers will contain first class and general class compartments and a small kitchen, from which meals will be served anywhere in the train.

The State Railways have so far taken over about 100 goods wagons from various private railways (in connection with the introduction of the compressed-air brake, as already mentioned in *THE RAILWAY GAZETTE*).

Level Crossing Elimination and Improved Permanent Way

Elimination of level crossings is continuing on an extensive scale over the whole country; 13 large viaducts will be completed in the course of the present year, most of them at crossings between main lines and main roads.

The remaining sections laid with old rails between Aarhus and Aalborg will be relaid in the course of the current year with a new standard main-line rail weighing 60 kg. per m. (120 lb. per yd.) against the 45 kg. per m. (90 lb. per yd.) used hitherto. This will be the first appearance of the new heavy section.

Stone ballast will replace gravel on further sections of secondary main line. In a few years' time gravel ballast should be eliminated from all the State primary and secondary main lines.

Traffic Control

Traffic control as used on the German lines is to be introduced between Copenhagen and Roskilde, and new passing sidings will be provided at Taastrup, about midway in this busy section; a special telephone system will also be introduced along the whole line for the control.

SWITZERLAND

Christmas and New Year Traffic

The Swiss Federal Railways and the connecting lines successfully dealt with a record Christmas traffic, the total number of special trains run on the Federal system (including 376 empty train movements) being 1,048 during the week from December 20 to 26, as against 958 the previous year. Receipts during this period were Fr. 3,216,000, or 0.9 per cent. lower than during the corresponding week in 1937. This was mainly because Christmas Day was on a Sunday, and many people were unable to arrange for a long week-end trip. Owing to the severe weather conditions in other parts of Europe, regular and special

trains reached the frontier from one to seven hours late, but by running them from Basle onward as specials any serious dislocation of Swiss internal services was avoided. The Engadine and Davos were particularly favoured this year by foreign visitors. During New Year week (December 27 to January 2), 496 special trains were run, or 24 more than in 1937, and 249 empties. Receipts were, however, 4.5 per cent. lower, or Fr. 2,754,000.

Winter Sports Arrangements

Several new lines of various types are catering for the winter sports enthusiast in Switzerland this season. A cableway, rising 800 m. and with cars for 20 passengers, now conveys skiers from the Valais resort of Champéry to the heights of Planachaux. Arosa opened its three ski-lifts simultaneously in December, and there are several new ski-funiculars, or sledgeways, including the steepest line of this kind in the country, which was inaugurated at Airolo, at the southern end of the Gottard tunnel.

HOLLAND

The New Organisation of the Netherlands Railways

As already foreshadowed in *THE RAILWAY GAZETTE*, the scheme of reorganisation of the Netherlands Railways includes, with the introduction of the new management, various changes in the organisations of the different departments. The different departments of administration are now as follow: General Management, Operating, Commercial, Traction & Rolling Stock, Way & Works, Personnel, and Financial Supervision (Audit), as constituted on January 1; as from February 1 a press service is being inaugurated.

COLOMBIA

Pacifico-Girardot Link

The increasing necessity for a line to link Ibagué with Armenia is emphasised in the Review of the Administrative Council of the Colombian National Railways. At present there is a gap of about 100 km. (62 miles) between the inland termini of the two main systems, over which traffic is carried by road. This road traffic amounted in 1933 to 102,522 passengers and 32,641 tons of goods, but it is estimated that in 1938, in spite of the state of the road, the figures will be found to have increased to 240,000 passengers and 130,000 tons of goods. If the present transshipments and road transit, often subject to interruption, could be replaced by a railway, giving a through service, it is considered that the traffic would still further increase. The proposal is obviously in the public interest, as it would round off the National railway system and give improved rail communication between the principal cities of the Republic, besides adding to the present railway revenues.

RAILWAY SPEED DEVELOPMENTS IN 1938

A summary of the world's fastest railway runs, the increase in aggregate high-speed mileage that has taken place during the last eight years in Europe and North America, and the proportions in these figures borne by steam, diesel, and electric haulage respectively

By CECIL J. ALLEN, M.Inst.T.

IT was in the issue of THE RAILWAY GAZETTE for February 4, 1937, that there appeared the last previous review of developments in high-speed transport in the various countries of the world in which speeds in excess of 60 m.p.h. from start to stop are scheduled to be run. The survey of the present article is based on the train services in operation during the summer of 1938, and once again there is a substantial advance in high-speed mileage to be set on record. In the aggregate, this is best seen by reference to Table F, which shows that from 1937 to 1938 runs booked at 70 m.p.h. and over from start to stop have increased in mileage from 8,584 to 10,169 miles, and those at 67 m.p.h. and over from 16,967 to 20,639 miles—the first time on record that these totals have exceeded 10,000 and 20,000 miles respectively. As for runs booked at a mile-a-minute and over, the enormous total of 93,312 miles has been reached—more than half of which is in the United States—and if the present scale of acceleration is continued, it is probable that a total of 100,000 miles will be attained and passed in 1939.

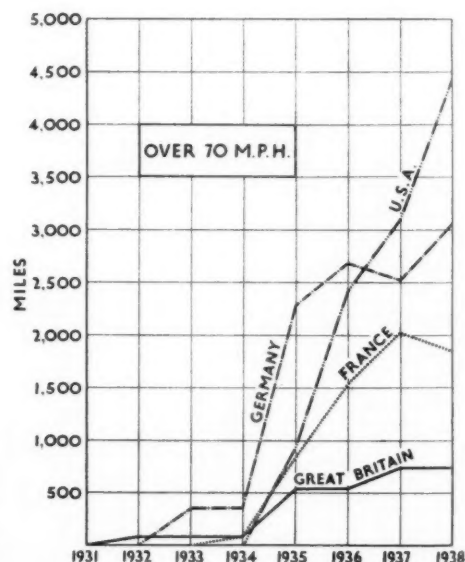
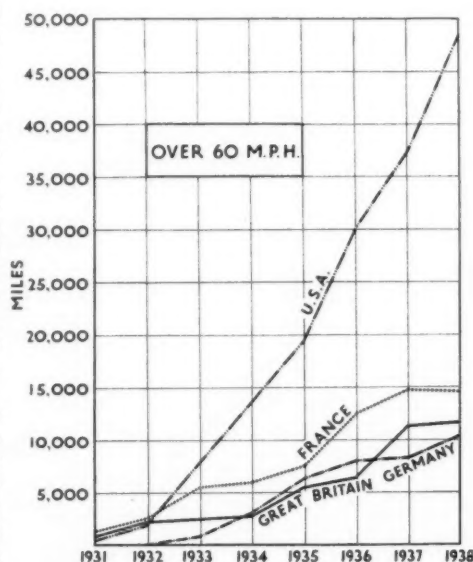
A Rapid Speed Advance

The rapidity with which high-speed travel has been developed on the world's railways is remarkable, as is evident from the comparisons in Table A. This is confined to the railways of Great Britain, France, Germany, and the United States, in which the major proportion of the world's high railway speeds are run, and shows the aggregate mileages scheduled at various speeds ranging from 58 m.p.h. and over to 70 m.p.h. and over in the years 1931 to 1938 inclusive. In Germany there was only a single short run as fast as 58 m.p.h. from start to stop in 1931, and up to 1932 none as fast as 60 m.p.h. from start to stop; in 1933 the inauguration of the Flying Hamburger—the first streamlined ultra high speed inter-city service in the world—started the meteoric speed increase which in six years had produced a total of 10,236 miles at the speed last mentioned. This, however, is a total inferior to those of Great Britain, France, and the United States. In Great Britain the biggest advances have been in 1932 (the year in which the long-standing agreement between the L.M.S.R. and L.N.E.R. not to cut the times of the day trains between London and Scotland was aban-

Table A.—Progress in World Railway Speed 1931–1938

Aggregate Mileage of Runs Scheduled Daily at Speeds of 58 m.p.h. and over from start-to-stop: Summer, 1938

Country	Year	75 m.p.h. and over	70 m.p.h. and over	66 m.p.h. and over	62 m.p.h. and over	60 m.p.h. and over	58 m.p.h. and over
		miles	miles	miles	miles	miles	miles
Great Britain	1931	—	—	77	77	861	2,395
	1932	—	77	77	634	2,134	4,540
	1933	—	77	77	576	2,375	5,209
	1934	—	77	77	747	2,607	5,537
	1935	—	542	778	1,868	5,371	7,805
	1936	—	542	778	2,265	6,226	9,294
	1937	—	730	1,606	4,152	11,228	16,019
	1938	—	730	1,606	4,714	11,665	18,012
France	1931	—	—	—	95	1,268	4,582
	1932	—	—	148	818	2,373	5,871
	1933	—	—	295	3,198	5,462	8,660
	1934	—	70	820	3,046	5,859	9,891
	1935	—	834	1,755	4,649	7,412	12,090
	1936	—	1,522	4,116	8,592	12,487	17,682
	1937	—	2,016	5,491	10,894	14,678	21,646
	1938	—	1,850	5,284	10,253	14,594	21,116
Germany	1931	—	—	—	—	—	30
	1932	—	—	—	—	—	387
	1933	356	356	356	712	712	814
	1934	356	356	712	2,009	2,836	5,192
	1935	1,542	2,287	3,641	5,118	6,276	11,008
	1936	1,709	2,683	3,708	5,580	7,982	12,056
	1937	1,504	2,513	3,819	5,660	8,235	12,626
	1938	1,275	3,043	4,919	7,182	10,236	14,365
United States	1932	—	—	—	454	2,022	—
	1935	119	935	3,964	11,530	19,279	—
	1936	385	2,422	8,686	19,345	30,047	—
	1937	694	3,194	9,242	24,771	37,412	—
	1938	1,012	4,415	12,630	31,293	48,247	—



Diagrams showing increase in aggregate mileage of runs scheduled at 60 and 70 m.p.h. and over in Great Britain, France, Germany, and the United States, 1931–1938

Table B.—The Fastest Scheduled Runs in the World
Summer, 1938

Country	Railway	Train	From	To	Distance Miles	Time Min.	Speed m.p.h.
<i>Diesel, &c., Trains</i>							
Germany...	State	Fliegende Köln	City of Denver	Hannover	109.6	80	82.2
U.S.A.	Union Pacific	City of Denver	Grand Island	Columbus	62.4	46	81.4
Germany...	State	Fliegende Köln	Hannover	Hannover	109.6	81	81.2
U.S.A.	Union Pacific	City of Denver	North Platte (Anhalt)	Kearney	95.0	71	80.3
Germany...	State	FDt 572	Berlin (Anhalt)	Leipzig	102.2	77	79.6
"	"	FDt 51	Hannover	Berlin (Zoo)	157.8	119	79.5
"	"	Fliegende München	Leipzig	Berlin (Anhalt)	102.2	78	78.6
U.S.A.	Santa Fe	Super-Chief	La Junta	Dodge City	202.4	155	78.3*
"	Burlington	"	Aurora	Galesburg	124.6	96	77.9
"	Union Pacific	" City"	North Platte	Grand Island	137.2	106	77.7‡
"	"	Services	Julesburg	North Platte	81.2	63	77.3
"	Burlington	Zephyr	Galesburg	Aurora	124.6	97	77.1
Germany...	State	El Capitan	Dodge City	Hutchinson	120.2	94	76.7*
U.S.A.	Santa Fe	FDt 571	Leipzig	Berlin (Anhalt)	102.2	80	76.6
U.S.A.	Santa Fe	Super-Chief	Dodge City	La Junta	202.4	159	76.4*
Germany...	State	Fliegende Hamburg	Hannover	Berlin (Lehrter)	178.1	140	76.3
"	"	FDt 45	Berlin (Schles.)	Breslau	204.7	161	76.3
"	"	FDt 46	Oppeln	Hannover	50.7	40	76.0
"	National (N.)	2 runs	Paris	Longueau	157.8	125	75.7 (2)
France	Santa Fe	Super-Chief	Dodge City	North Platte	78.2	62	75.7
U.S.A.	Union Pacific	City of Denver	Kearney	North Platte	122	75.2*	75.2*
"	"	FDt 37	Stirling	Julesburg	55.0	46	75.0
U.S.A.	Burlington	Twin City	Oshtemo	Frederic	75.8	61	74.5
"	Union Pacific	Zephyr	Kearney	Chien	54.6	44	74.5 (2)
Germany...	State	FDt 10	Hastings	Grand Island	42.2	34	74.5
"	"	Zephyr	Denver	Lincoln	78.0	63	74.3
"	"	FDt 38	Berlin (Lehrter)	Fort Morgan	178.1	144	74.2
France	National (S.E.)	No. 8	Brennen	Brennen	71.7	58	74.2
U.S.A.	Santa Fe	El Capitan	Dodge City	Dodge City	99.0	80	74.2
Germany...	State	FDt 78	Hannover	Hannover	202.4	164	74.0*
U.S.A.	Rock Island	Rocket	Joliet	Ottawa	110.9	90	73.9
Germany...	State	Services	Oppeln	Heidebreck	44.3	36	73.8 (3)
"	"	FDt 45 and 46	Hannover	Berlin (Zoo)	25.8	21	73.7 (†2)
U.S.A.	Burlington	Holdrege	Hastings	Hastings	157.8	129	73.4
"	"	Köln	Holdrege	Hastings	54.8	45	73.1 (†2)
France	Santa Fe	Zephyr	Newton	Hutchinson	32.9	27	73.1*
U.S.A.	National (E.)	El Capitan	Nancy	Paris	219.1	180	73.0
"	Burlington	Denver	Fort Morgan	McCook	176.4	145	73.0
* Twice weekly † Runs in both directions ‡ Twenty times in each month							
§ Since changing over to electrical operation							
Numbers in brackets in last column indicate number of runs daily at this speed							

Country	Railway	Train	From	To	Distance Miles	Time Min.	Speed m.p.h.
<i>Steam-operated Trains</i>							
U.S.A.	Milwaukee	Hiawatha	New Lisbon	Portage	43.1	35	73.9
"	Pennsylvania	Detroit Arrow	Fort Wayne	Englewood	140.9	115	73.6
"	Chicago	The 400	Chicago	Fort Wayne	140.9	115	73.6
Gt. Britain	L.N.E.R.	Coronation	King's Cross	York	188.2	157	72.8
Germany	State	Hiawatha	Portage	New Lisbon	43.1	36	71.9
Gt. Britain	G.W.R.	Cheltenham	Berlin	Hamburg	178.1	149	71.7
U.S.A.	Pennsylvania	Liberty Ltd	Swindon	Paddington	77.3	65	71.4
Germany	State	FD 23	Plymouth	Fort Wayne	64.1	54	71.2
U.S.A.	New York	20th Century	Hannover	Berlin	178.1	151	70.7
"	Illinois	Daylight	Toledo	Elkhart	133.0	113	70.6
"	Chicago	Shoreland	Kankakee	Gibson City	54.1	46	70.6
Gt. Britain	L.N.E.R.	Silver Jubilee	Fort	Kenosha	25.9	22	70.6
U.S.A.	Milwaukee	Hiawatha	King's Cross	Darlington	232.3	198	70.4
"	New York	20th Century	Darlington	King's Cross	232.3	198	70.4
France	National (S.W.)	Sud Express	New Lisbon	La Crosse	59.8	51	70.4
U.S.A.	State	D 53	Elkhart	New Lisbon	133.0	114	70.0
U.S.A.	Pennsylvania	Broadway Ltd	Poitiers	Angoulême	70.0	60	70.0§
"	Illinois	Daylight	Englewood	Fort Wayne	140.9	122	69.3
Gt. Britain	L.N.E.R.	West Riding	Berlin	Leeds	109.3	95	69.0
U.S.A.	Milwaukee	Hiawatha	Fort Wayne	Englewood	140.9	123	68.7
"	Illinois	Daylight	Plymouth	Fort Wayne	64.1	56	68.7
Gt. Britain	L.N.E.R.	West Riding	Gibson City	Gibson City	20.6	18	68.7
U.S.A.	State	D 53	West	Jenkintown	21.7	19	68.5
Gt. Britain	L.N.E.R.	West Riding	Leeds	Leeds	185.7	163	68.4
U.S.A.	Milwaukee	Hiawatha	Chicago	Deerfield	23.9	21	68.3
"	Illinois	Daylight	Valence	Avignon	77.3	68	68.2
Gt. Britain	L.N.E.R.	West Riding	Leeds	King's Cross	185.7	164	68.0
U.S.A.	State	D 53	Chicago	Milwaukee	85.0	75	68.0 (†2)
"	Illinois	Daylight	Milwaukee	Chicago	85.0	75	68.0
"	Pennsylvania	Liberty Ltd	Gary	Plymouth	58.9	52	68.0
<i>Electrically-operated Trains</i>							
U.S.A.	C.N.S. & M.	2 Runs	Kenosha	Waukegan	15.0	12	75.0 (2)
Italy	State	R 25	Rome	Naples	130.5	109	71.8
U.S.A.	Pennsylvania	Congressional	North Philadelphia	Newark	76.0	64	71.3
"	"	"	Newark	North Philadelphia	76.0	65	70.2
Italy	State	R 24	Naples	Rome	130.5	112	69.9
U.S.A.	Pennsylvania	R 24 and R 25	Bologna	Florence	60.2	52	69.4 (†2)
"	"	Broadway Limited	Newark	North Philadelphia	76.0	66	69.1 (†2)
C.S.S. & S.B.	No. 41	No. 206	New Carlisle	Bendix	11.5	10	69.0
Pennsylvania	Congressional	Senator	Trenton	Newark	48.1	42	68.7
"	"	No. 202	Wilmington	Baltimore	68.5	60	68.5 (†2)
"	"	"	North Philadelphia	Newark	76.0	67	68.1 (2)

doned), 1935 (the year of the establishment of the first British streamlined train, the L.N.E.R. Silver Jubilee), and 1937 (the year in which the Coronation, Coronation Scot, and West Riding Limited began to run, and the L.M.S.R. laid down its policy of a mile-a-minute standard of speed between stops). Thus the British total booked at 60 m.p.h. and over from start to stop has risen from 861 miles in 1931 to 11,665 miles in 1938.

In France the biggest single increment was in the year 1936, when a number of new railcar services came into operation. The summer of 1938, however, saw a definite retrogression from the figures of the previous years, and had the figures been taken from the French timetables at the end of 1938, there would have been a considerable drop, particularly in the higher ranges of speed, owing to the withdrawal of many of the railcar services as an economy measure. In America, on the other hand, notwithstanding the depression in trade, the railways have continued their bold policy of acceleration, and have now reached the very high total of 48,247 miles booked at 60 m.p.h. and over daily, 12,630 miles at 66 m.p.h. and over, and 4,415 miles at 70 m.p.h. and over. Seeing that as recently as 1932 the total of American mile-a-minute runs was only 2,022 miles, the astonishing progress of no more than six years will be better appreciated. In calculating the American high-speed figures, some difficulty has been presented by such trains as the Super-Chief and El Capitan of the Santa Fe, which each run twice weekly between Chicago and Los Angeles, and the City of Los Angeles, City of San Francisco, and City of Portland of the combined Union Pacific, Chicago & North Western, and Southern Pacific lines, the first of which runs twice weekly and the other two once weekly, and in order to give a fair comparison, a proportion only of the mileage of the runs made by these trains has been included in the American totals. The graphic representation of the speed developments in Europe and America shows at a glance how continuous the progress has been.

The Fastest Runs in the World

In Table B the fastest booked railway runs in the world appear in their speed sequence, runs operated by diesel or similar power, steam, and electricity being separately classified. For the present the limit appears to have been reached, both with diesel and steam power; indeed, there are only four journeys, two in Germany and two in the United States, booked at over 80 m.p.h., as compared with six in 1937, and a number of the German high-speed runs have been slightly slowed. But the addition of numerous new diesel-driven trains in America, Germany, and France has introduced a number of new high-speed bookings, so much so that this list of runs booked at over 73 m.p.h. occupies more space than the 1937 table of runs at over 72 m.p.h. The German *Fliegende Kölner* still holds the blue riband of railway speed with its run over the 109.6 miles from Hanover to Hamm at 82.2 m.p.h., closely followed by the City of Denver of the Union Pacific, U.S.A.; the former now consists of two three-car units, six cars in all, and the latter is a 12-car train.

In the steam section of the table, however, the slowing down by 5 min. of the evening "FD" express from Berlin to Hamburg deprives Germany of the supremacy, which now passes to the *Hiawatha* of the Chicago, Milwaukee, St. Paul & Pacific, with its 73.9 m.p.h. run from New Lisbon to Portage. Next comes the *Detroit Arrow* of the Pennsylvania, remarkable in that it takes second and third places, at 73.6 m.p.h., without any assistance from streamlined stock or ultra-modern locomotives, the *Atlantics* and *Pacifics* used on this service both being designs dating back more than twenty years. After the 72.8 m.p.h. run of The 400, Chicago & North Western Rail-

road, comes the Coronation of the L.N.E.R., the fastest run in the British Empire and the fastest with steam in Europe. The German run which took premier place in 1937 is now seventh on the list, followed by the Cheltenham Flyer of the G.W.R.; in 1932, when the last-mentioned train was accelerated to its present speed, it was the fastest run in the world, but it now takes the eighth place with steam and the 80th place among the fastest railway runs with diesel, steam, and electric power.

It is a tribute to the modern development of American locomotive power that the ninth and eleventh runs in the table, those of the Pennsylvania Liberty Limited at 71.2 m.p.h. and of the New York Central Twentieth Century Limited at 70.6 m.p.h., are made with lengthy sleeping car expresses, the latter up to fourteen cars, though with new streamlined stock in which the traditionally heavy weight of American stock has been considerably reduced by new methods of construction; the Twentieth Century is also booked at 70.0 m.p.h. over the same course in the opposite direction. Since the introduction of the winter timetables, also, the competing Broadway Limited of the Pennsylvania has been accelerated to a run in the level two hours over the 140.9 miles from Englewood to Fort Wayne, raising the speed to 70.5 m.p.h. from start to stop. It is a tribute to the successful fight that is being waged by steam locomotive designers against the encroachments of the diesel engine that this table lists nineteen runs made daily by steam locomotives at speeds of from 70.0 to 73.9 m.p.h. from start to stop, twelve in the U.S.A., four in Great Britain, two in Germany, and one in France. The last-mentioned, however, has since been turned over to electric power.

In the electrically-operated section of the table the chief innovation is the appearance of one of the Italian high-speed units in the second place, immediately after the two very smart runs of the American Chicago, North Shore & Milwaukee inter-urban electric line, which were similarly at the top of the list in 1937. The proposal to bring the Rome-Naples time of these Italian flyers down to 90 min., which would have given them a scheduled speed of 87.0 m.p.h. and the fastest timings of any kind in the world, has not, however, materialised. Apart from the four Italian runs listed, there is very little change in this section of the table from the runs of 1937.

Individual Railway Speed Totals

Table C gives the high-speed mileages of all railways which schedule over 500 miles daily at speeds of 60 m.p.h. and over, and there are some considerable changes in the order in which the railways appear, as compared with 1937. The grouping of the French railways carries the combined National system of France to the top of the table; next comes the Pennsylvania system of the U.S.A., with a total mileage at 60 m.p.h. and over—11,439 miles—almost exactly equal to that of 1937. But the New York Central of the U.S.A. has made so substantial an advance—from 6,730 to 10,921 miles—as to carry it above the 10,236 miles of the German State Railway. Next comes the L.M.S.R. of Great Britain, with 6,318 miles; but the absence of any ultra high-speed mileage from the L.M.S.R. totals, although that company is fifth in the list at 60 m.p.h. and over, puts it eleventh in the list at 62 m.p.h. and over, and as far down as twenty-first at 64 m.p.h. and over; while there are no L.M.S. runs booked at 65 m.p.h. or upwards. One of the most striking developments in this table is the appearance, for the first time, of the Netherlands Railways; for so small a country as Holland to take the seventh place, and to show as great a mileage as 3,863 miles at 60 m.p.h. and over its initial year of fast travel, is a highly creditable achievement. The Santa Fe of the U.S.A. has moved up from the bottom

Table C.—Aggregate High-Speed Mileage of the World's Railways—Summer, 1938

Country	Railway	Mileage scheduled daily at			
		70 m.p.h. and over	64 m.p.h. and over	62 m.p.h. and over	60 m.p.h. and over
		Miles	Miles	Miles	Miles
France ...	National ...	1,850	7,091	10,253	14,594
U.S.A. ...	Pennsylvania ...	498	5,961	8,909	11,439
U.S.A. ...	New York Central ...	266	2,423	5,280	10,921
Germany ...	State ...	3,043	5,833	7,182	10,236
Gr. Britain ...	L.M.S.R. ...	—	223	1,528	6,318
U.S.A. ...	Burlington ...	973	2,977	3,279	3,965
Holland ...	Netherlands ...	—	1,247	2,202	3,863
U.S.A. ...	Santa Fe ...	452	1,578	2,563	3,471
U.S.A. ...	Union Pacific ...	1,399	1,700	2,039	3,163
Gr. Britain ...	L.N.E.R. ...	653	1,293	2,103	2,896
U.S.A. ...	G.W.R. ...	77	313	1,083	2,420
U.S.A. ...	Chicago & N.W. ...	88	1,412	1,996	2,362
Italy ...	State ...	131	929	1,399	2,125
U.S.A. ...	Milwaukee ...	206	709	1,386	2,059
Belgium ...	National ...	—	624	624	1,573
U.S.A. ...	Chicago, N.S. & M. ...	30	193	465	1,534
U.S.A. ...	Baltimore & Ohio ...	—	197	585	1,487
U.S.A. ...	Penn.-Rdg.-Seashore ...	—	197	392	1,144
U.S.A. ...	Rock Island ...	199	694	818	1,087
U.S.A. ...	*C.B. & Q. & C.R.I. & P. ...	71	715	751	875
U.S.A. ...	Chicago & Alton ...	—	282	612	761
Denmark ...	State ...	—	38	385	664
U.S.A. ...	Wabash ...	—	129	192	640
U.S.A. ...	Chicago & E. Illinois ...	—	311	415	573
U.S.A. ...	Southern Pacific ...	—	95	184	568
U.S.A. ...	Illinois Central ...	233	431	475	543
U.S.A. ...	Reading ...	—	299	440	514

* Joint diesel services

† Subsidiary of Baltimore & Ohio

of the table to the eighth place; and the Rock Island company appears for the first time. It is significant of modern ultra high speed that sixteen different railway systems can now show runs booked at over 70 m.p.h. from start to stop; this is equivalent to twenty, if the previously independent French railways are reckoned separately instead of as one grouped railway.

Table D.—A Comparison of High Speed and Route Mileage (Individual Railways)—Summer, 1938

Country	Railway	Speed Mileage*	Route Mileage†	Per cent.‡
United States	Chicago, North Shore and Milwaukee ...	1,534	136	1,128
"	Pennsylvania-Reading-Seashore ...	1,144	412	278
Holland	Netherlands ...	3,863	1,845	210
United States	Pennsylvania ...	11,439	10,413	105
"	New York Central ...	10,921	11,314	97
Great Britain	London Midland & Scottish ...	6,318	6,870	92
"	Great Western ...	2,420	3,781	64
United States	Chicago & East Illinois ...	573	931	62
France	National (All Regions) ...	14,594	26,849	54
Belgium	National ...	1,573	3,011	52
Great Britain	London & North Eastern ...	2,896	6,365	45
Denmark	State ...	664	1,490	45
United States	Chicago, Burlington & Quincy ...	4,403	10,838	41
"	Reading ...	514	1,408	37
"	Union Pacific ...	3,163	10,067	31
Germany	State ...	10,236	33,787	30
United States	Baltimore & Ohio ...	2,248	7,404	30
"	Chicago & North Western ...	2,362	8,391	28
"	Atchison, Topeka & Santa Fe ...	3,471	13,799	25
"	Wabash ...	640	2,728	23
Italy	State ...	2,125	10,130	12
United States	Rock Island & Pacific ...	1,525	7,512	20
"	Chicago, Milwaukee, St. Paul & Pacific ...	2,059	11,025	19
"	Illinois Central ...	543	6,830	8
"	Southern Pacific ...	568	13,531	4

* Booked daily at 60 m.p.h. and over † Standard 4-ft. 8½-in. gauge

‡ Speed mileage as a percentage of route mileage

Table D has been compiled in order to give a fairer representation of the speed enterprise of each railway system relatively to its size, by proportioning the aggregate mileage of its runs booked at 60 m.p.h. and over to its route mileage. The result is, of course, a complete alteration of the order of the different lines as seen in Table C, some of the smaller lines coming to the top of the table owing to the relatively high speed of practically all their services; on the other hand, very large systems whose high-speed trains are confined to main lines only, and are limited in number, take a low place. Far superior to all other railways in Table D is the Chicago North Shore and Milwaukee, an inter-urban electric tramway noted for its extremely high speeds over short distances; during the autumn of 1937 this line was compelled to close down owing to a strike, but traffic recommenced in October. The second place is taken by the Pennsylvania-Reading-Seashore line in the U.S.A.—a combination of the interests of the Pennsylvania and Reading Companies between Philadelphia and the Atlantic coast. Next comes the Netherlands Railways, to the speed enterprise of which in 1938 reference has already been made; it is a remarkable feat indeed to take third place in this table, and the first place in Table E, after not so much as having appeared in either table in any previous year.

As last year, the Pennsylvania is found in the fourth place, but the New York Central has in 1938 come up from ninth to fifth place—58 to 97 per cent.—by reason of extensive accelerations on its own lines and those of its subsidiaries; it should here be added that all the American railway route mileages cited include those of subsidiary systems. The British L.M.S.R. is in the sixth place instead of the fifth last year, but the G.W.R. comes up from tenth to seventh, chiefly because the French railways, which occupied four higher places in this table in 1937, now drop to ninth place owing to their amalgamation into one National system.

National Speed Standards

In Table E the same proportions are set out country by country, instead of those of individual railways. Whereas in 1937 Great Britain occupied the premier place, Holland with its extremely fast inter-urban diesel and electric trains, takes a considerably higher position, and is fully entitled to claim the fastest general standard of railway speed of any country in the world. Viewed in

Table E.—A Comparison of High Speed and Route Mileage (Countries)—Summer, 1938

Country	Speed Mileage*	Route Mileage†	Per cent.‡		
			1936	1937	1938
Holland ...	3,863	2,114	—	—	182.7
Great Britain ...	11,665	20,121	30.5	55.8	58.0
Belgium ...	1,573	3,209	16.7	26.1	49.0
France ...	14,594	40,348	31.0	36.4	36.2
Germany ...	10,236	36,256	16.7	26.1	28.2
Denmark ...	664	3,326	5.8	22.3	19.9
United States ...	48,164	245,752	12.2	15.2	19.6
Italy ...	2,125	11,383	6.5	12.5	18.7
Switzerland ...	150	3,677	2.8	2.8	4.1
Czechoslovakia ...	88	8,383	—	—	1.0
Canada ...	83	42,046	—	0.1	0.2

* Booked daily at 60 m.p.h. and over

† All gauges

‡ Speed mileage as a percentage of route mileage

relation to the enormous aggregate railway mileage of the countries concerned, the speed achievements of Germany and the United States sink to a considerably lower level in this table than might have been deduced by the list of their fastest runs, and the all-round standard of speed

Table F.—Comparison of the World's Scheduled High-Speed Mileage with Diesel, Steam, and Electric Operation—Summer, 1938

Country	70 m.p.h. and over	67 m.p.h. and over	64 m.p.h. and over	62 m.p.h. and over	60 m.p.h. and over
	Miles	Miles	Miles	Miles	Miles
<i>Steam-operated</i>					
United States ...	960	2,309	6,843	12,524	23,692
Great Britain ...	730	1,606	1,829	4,714	11,665
France ...	70	147	1,413	2,979	6,074
Germany ...	356	575	915	1,857	4,360
Belgium ...	—	142	219	219	554
Italy ...	—	—	—	103	205
Canada ...	—	—	—	21	83
<i>Diesel-operated</i>					
United States ...	3,273	5,532	9,230	11,832	14,840
France ...	1,780	3,636	5,063	5,792	6,343
Germany ...	2,687	3,708	4,544	4,605	4,787
Holland ...	—	—	599	869	1,949
Italy ...	—	—	548	718	1,146
Belgium ...	—	—	405	405	1,019
Denmark ...	—	—	38	385	664
Poland ...	—	—	28	82	107
Czechoslovakia ...	—	—	—	—	88
<i>Electrically-operated</i>					
United States ...	182	1,955	4,398	6,916	9,632
France ...	—	—	615	1,482	2,177
Holland ...	—	648	648	1,333	1,914
Germany ...	—	—	374	720	1,089
Italy ...	131	381	381	578	774
Switzerland ...	—	—	—	—	150
Steam-operated totals ...	2,116	4,779	11,219	22,417	46,633
Diesel-operated totals ...	7,740	12,876	20,455	24,688	30,943
Electrically-operated totals ...	313	2,984	6,416	11,029	15,736
GRAND TOTALS ...	10,169	20,639	38,090	58,134	93,312
Steam haulage, per cent.	21	23	29	38½	50
Diesel haulage, per cent.	76	62½	54	42½	33
Electric haulage, per cent.	3	14½	17	19	17

in America, Germany, and even France is materially inferior to that obtaining in Great Britain, despite the fact that all British high speed is obtained with steam.

Diesel High-Speed Progress

Table F is of considerable interest as showing the progress in the fight between steam and the later competitors—diesel and electric power—for the supremacy in high-speed rail transport; it should be explained that included with diesel are the comparatively few other internal-combustion-engined vehicles, such as the petrol-driven Bugattis in France, used for this purpose. Once again the percentage of diesel-operated mileage has increased in all ranges of speed as compared with 1937—at 70 m.p.h. and over from 74 to 76 per cent., and at 64 m.p.h. and over from 49 to 54 per cent., while at 62 m.p.h. and over steam and diesel change places—42 and 38½ per cent. respectively in 1937 and 38½ and 42½ per cent. respectively in 1938. Even at 60 m.p.h. and over, steam haulage has now dropped down to exactly one-half the aggregate mileage of runs at this speed, diesel haulage being responsible for one-third—33 per cent.—and electric haulage for 17 per cent. The electric percentages have scarcely altered from 1937, so that all the gain of diesel has been at the expense of steam; actually all the high-speed steam mileages are greater than those of 1937, but the diesel mileages have increased in a greater proportion still. Of the total of diesel-operated runs, those at 70 m.p.h. and over have increased from 6,383 to 7,740 miles in the year, at 64 m.p.h. and over from 15,450 to 20,455 miles, and at 60 m.p.h. and over in one leap from 20,915 to 30,943 miles, or by all but 50 per cent. These comparative figures show in a striking way how rapidly diesel propulsion has established itself in a very short space of time as the principal means of maintaining ultra high speed on rails.

The Swindon Refreshment Room

Towards the end of 1840 the directors of the Great Western Railway made arrangements with J. & C. Rigby of Millbank to erect refreshment rooms at Swindon at their own cost, and to lease them when built for 99 years from Christmas, 1841, at a rent of a penny a year. To ensure profits to J. & C. Rigby it was agreed that all regular trains should stop at Swindon "for a reasonable period of about ten minutes," and that no rival stopping place for refreshments should be established between London and Bristol. Within a week of completion of the lease, the Rigby's sublet the refreshment business to S. Y. Griffiths of the Queen's Hotel, Cheltenham, for seven years at £1,100 a year plus a premium of £6,000. In August, 1848, they sold the lease outright to J. R. Phillips for £20,000. From the very first the catering arrangements were unsatisfactory and even before the permanent refreshment rooms were opened on July 14, 1842, serious complaints were made about the quality of the food and the prices charged. In December, 1842, we find Brunel himself writing the following characteristic letter, evidently in reply to one from Griffiths:—

Dear Sir,—I assure you Mr. Player was wrong in supposing that I thought you purchased inferior coffee. I thought I said to him that I was surprised you should buy such bad roasted corn. I did not believe you had such a thing as coffee in the place; I am certain that I never tasted any. I have long ceased to make complaints at Swindon. I avoid taking anything there when I can help it. **I. K. BRUNEL**

This stop at Swindon was responsible in part for very poor average speeds being scheduled, and as the broad gauge had been adopted for the purpose of making high

speed possible, an anomalous situation arose. In 1845 the directors decided to cut down to 4½ hours the journey between Paddington and Exeter from May 12 and the Swindon stop was reduced to one minute. Although the average of 43 m.p.h. maintained served in very good stead the advocates of the broad gauge, it was not allowed to exist very long. The lessee of the refreshment rooms complained and eventually filed a bill in Chancery against the company to compel the stoppage of the trains for the covenanted ten minutes. The railway company relied on a clause in the lease which exempted "trains to be sent express or for special purposes and trains not under the control of the Great Western Railway." The Court decided that a train "sent express" meant only a private special and not a public train, so with the final judgment against the company, the ten minute stop was reinforced on January 26, 1846.

A second law suit took place in 1872 when the Postmaster General ordered two trains to be considered mail trains, stopping at Swindon for five minutes only. This time the Court decided in favour of the railway company as the trains were "not under the control of the G.W.R." Eventually, in 1895, to rid itself of this incubus, the Great Western Railway purchased the remainder of the lease for £100,000 which sum was liquidated by an annual charge against revenue which lasted until 1920. From October, 1895, the Cornishman ran the 118½ miles between London and Bristol non-stop in 2¼ hours, and the South Wales express between London and Bath covered the 107 miles in two hours. These were the first 100-mile runs on the Great Western Railway.

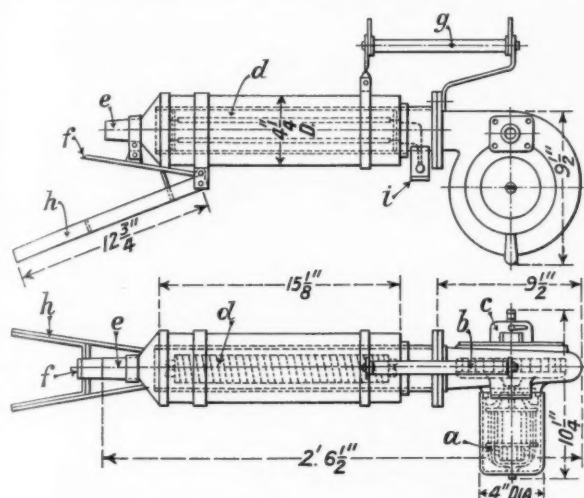
CLEARING POINTS OF SNOW AND ICE

A device for projecting a blast of hot air has been tried with success in Germany

IN winter weather no little difficulty is experienced, especially in some Continental countries, in keeping points free from snow and ice and permitting train and shunting movements to be carried on with regularity. Brushes and scrapers are of but limited use when conditions are at all bad, and various heating devices have been employed and applied with varying degrees of success. At the new Milan Central station, for example, the points have been equipped with fixed electric heating elements, as described in *THE RAILWAY GAZETTE* for January 3, 1936, page 22, and with such satisfactory results that the Italian State Railways have since applied

and objects away from the fittings being thawed. There is also a carrying handle *g* and a movable support piece *h*. The electric cable is attached at the point *i*; it is 1 m. (3 ft. 3 in.) long and has a plug connector enabling it to be attached to others of such lengths as may be most convenient in the locality; three-core cables affording a safety earthing connection are used. The motor will run on a.c. or d.c., consuming about 15 amp. at 220 volts.

When the air inlet is closed as far as possible, it is only 12 mm. ($\frac{1}{2}$ in.) dia, and the air blast attains the maximum temperature of 230° Centigrade, with ambient temperature at freezing point; by regulating the inlet this can be varied down to 140° Centigrade. The action is very rapid and frozen fittings are speedily thawed without damage. Five minutes suffice to free points completely frozen, at only a small cost for power. Dry snow and other obstructions can also be blown away, and the apparatus is even useful for drying-out and other processes in normal and warmer weather. The Bingerbrück and St. Goar stations were fitted with a number of plug-in points to the electric light mains and three extension cables of 50 m. ($54\frac{1}{2}$ yd.) provided for each heater, enabling it to be used over a wide range. The apparatus requires very little attention and maintenance, and has afforded much satisfaction in service. No special knowledge is needed to handle it and no danger can arise from it.



Dimensions of electrically-driven hot-air blower for melting accumulations of snow and ice on points

them at other stations. Certain chemical compositions have also been introduced (such as that described in our columns on December 4, 1936, page 945) to prevent the adherence of ice and snow to points, signal fittings, conductor rails, and so on, with beneficial results, while the thawing of frozen equipment is sometimes accomplished with torches, blowlamps, and other flame-throwing devices. These, however, need to be handled with considerable care, otherwise there is risk of damage being done to vital parts, particularly electric cables and wires in the vicinity. Delays due to circuits being interrupted in this way may be as great as any caused by frozen fittings. Some interest, therefore, attaches to a hot-air blast device constructed by the Siemens-Schuckert works, and in use for the last six years at Bingerbrück and St. Goar on the German State Railway. The following particulars are taken from a description by Herr L. Schäfer of Bingen in the *Zeitschrift für das gesamte Eisenbahn-Sicherungs und Fernmeldewesen* for December 10, 1938. The construction will be clear from the accompanying drawing.

The device weighs 13 kg. (29 lb.) and consists of the motor *a*, the blower wheel *b*, the variable air inlet *c*, the heavily insulated heating element *d*, the blast nozzle *e*, and the prong piece *f*, useful for clearing small particles

Double Chimney Efficiency

The exploits of the five double-chimney Pacifics on the L.N.E.R., together with No. 10000, the streamlined 4-6-4, show that the increased freedom of exhaust so obtained is adding markedly to the tractive power of these engines. Among recent feats that we have noted behind the 4-6-2s, mention made be made of a speed of $57\frac{1}{2}$ m.p.h. attained from a dead start with a 390-ton train up the $5\frac{1}{4}$ miles from Grantham to Stoke summit; and as the engine was still steadily accelerating at Stoke the mile-a-minute rate would have been attained in less than 6 miles, had the grade been prolonged. The same journey produced two downhill maxima of 92 m.p.h., and but for a brake check to 83 m.p.h. between them, a top speed but little short of 100 m.p.h. would probably have been reached. From Grantham to King's Cross, including the severe Peterborough slowing, there was a net time of 95 min. for the 105.5 miles, and earlier in the same journey the 44.1 miles from Darlington to York had been run in $40\frac{1}{2}$ min. net from start to stop, the engine thus gaining on schedule 15 min. net on these two stages alone.

Another engine of the same type ran from York to Darlington, against the rising tendency of the road, in 42 min. net—5 min. gain—attaining 80 m.p.h. on the level at Thirsk with a 360-ton train, while with a heavier load of 485 tons we have noted a minimum of 61 m.p.h. up the long ascent to Peascliffe tunnel, concluding at 1 in 200, a maximum of 93 m.p.h. at Essendine, and a net time of 100 min. from Grantham to King's Cross. Possibly the Kylchap exhaust arrangements, installed on a wider scale, may help to solve such problems as that of the weight of the new Flying Scotsman train, to which attention has been drawn in these columns recently.

MEASURED SHOVEL PACKING

The success of this system of permanent way maintenance has lead to its adoption with further refinements as standard throughout the L.M.S.R.

SO successful has the method of permanent way maintenance by measured shovel packing been on the L.M.S.R. that it has now been adopted as standard for the whole system. Other railways too, both at home and abroad, are trying the method which, according to the experience of the L.M.S.R. not only enables a better top to be maintained to the rails, but reduces the labour expended in achieving this result. Although we described the method in THE RAILWAY GAZETTE of July 9, 1937 (pages 65-67), it may be worth briefly repeating the salient features. The packing of the track by the L.M.S.R. method of shovel packing is accomplished in three stages. First, low places on the rail are measured by means of sighting boards; secondly, the depth of any voids there may be between the underside of the sleepers and the ballast when the track is unloaded is recorded on a series of Abtus voidmeters; and thirdly, the requisite amount of chippings, determined by the two measurements, is spread under the sleepers.

Measuring the Low Spots

To measure the extent to which the track is out of level when no traffic is on it, a set of three special sighting boards or boning rods is used. These boards are fitted to short posts having clips at the bases so that they are readily fixed on the top of the rail. One board is provided with a slit at the level of the eye of a man sitting on the rail; the second or intermediate board is painted half yellow and half black with a vertical division between these colours running down the centre of the board. The post of this intermediate board is adjustable in height and provided with a scale so that the amount of extension required to bring the top of the board level with the eye-slit in the first board is readily determined. The third board is painted with the face divided into four spaces to present a chequered appearance of four rectangles, the yellow and black colours being divided vertically down the centre and horizontally across the board at the same level as the eye-slit of the first board. All three sighting boards are fitted with spirit levels to ensure that they stand perfectly vertical when clipped to the rail.

The ganger sights along the rail in the usual way and locates two high spots preferably not more than 120 ft. apart. The first or eye-slit sighting board is then fixed at one high spot, and the third or target chequered board at the other. The second board is then placed on the rail over a sleeper intermediate between the high spots. The height of this board is then adjusted until the top is level with the eye-slit and the horizontal dividing line between the checks on the board most distant from the observer. The number of divisions revealed on the scale of the intermediate board when it has been raised is then read off and the figure chalked on the rail immediately below this board. The intermediate board is then moved over the other sleepers until the amount of "static" slack for all the sleepers between the high spots has been determined. Sights are generally taken at every fourth sleeper, and differences fractioned by quarter units or larger fractions over the three intermediate sleepers.

The permanent way gang is supplied with a dozen voidmeters for measuring the depression under traffic of those

sleepers which have been found, by bumping with a bar, to be hanging. Steel bars 21 in. in length are driven into the ballast about 3 in. from the side of each sleeper and 1 in. outward from the end of the chair. To each of these bars a voidmeter is clamped at such a height that the short end of the spring loaded pointer is in contact with the top of the sleeper and the pointer exactly on one of the divisions of the scale. The second, or friction pointer, is made to coincide with the spring pointer by pushing it so that the projection near its tip is in contact with the side of the latter. The weight of passing traffic depresses the sleeper beneath which there is a void and the spring loaded end of the pointer goes down with the sleeper, moving the upper end which carries with it the friction pointer. Thus, after a train has passed, the two pointers are separated by a distance having a fixed relation to the depression of the sleeper. The number of divisions on the scale by which the pointers are separated is read and chalked on the sleeper.

The sum of the figures obtained for each sleeper by these static and dynamic measurements determines the quantity of chippings required to be spread under the sleeper to take out both the low place in the "top" and the void which allowed it to sink under the wheel load. For the sake of simplicity small canisters are used, the capacity of which is the unit of measurement, and the sum of the figures chalked on the rail and the sleeper gives the numbers of canisters of chippings required. Care is taken in using the voidmeters to see that the bars driven into the ballast are reasonably firm so that they will not be moved by the resistance of the pointer spring when traffic is passing. The friction pointer is adjusted so as to be just stiff enough in its movement to follow the spring-loaded pointer and remain at its furthest position. A small thumb nut is used for adjustment.

It is obviously important that the proper size of chippings be used and the size of the canister used on the L.M.S.R. has been based on the use of $\frac{1}{4}$ -in. minimum to $\frac{1}{2}$ -in. maximum clean granite or other suitable stone chippings evenly spread over 15 in. on each side of the rail and completely covering the width of the sleeper for that distance. The canister, $3\frac{1}{2}$ in. internal diameter and $4\frac{7}{8}$ in. high, is made of 20 S.W.G. lead-covered sheet iron spot-welded. To make this canister a measure for 10 in. as well as 12 in. wide sleepers, short slits are cut $\frac{7}{8}$ in. down from the top; for the narrower sleepers it is filled only up to the level of these slits, and for wider or joint sleepers it is filled flush with the top.

Method of Placing Packing

The actual chip packing must be done by spreading, the track being lifted with a jack designed to fit snugly below the top of the rail and capable of instantaneous release on the approach of a train. The track is raised just sufficiently to permit the clear passage of the packing shovel with its charge under the sleeper. On the L.M.S.R. the ballast is removed from between every alternate pair of sleepers, and the chippings are spread from one side only of each sleeper, a special goose-necked shaped shovel with a flat blade being used. Care is always taken to ensure that all chair screws and keys

Right: Measuring the depth of low spots on the rail top by means of sighting boards



Left: Measurements chalked on rail. The photographs, it will be observed, were taken on a section of line laid experimentally with flat-bottom rails as described in "The Railway Gazette" of July 19, 1937

Right: Voidmeters set on sleepers ready to register depression under passing traffic



Spreading chippings under sleeper



Abtus level transfer gauge

MEASURED SHOVEL PACKING ON THE L.M.S.R.

are quite tight before taking the measurements for shovel packing.

In order to save taking the static levels on the top of both rails an Abtus level transfer gauge has been devised. This is set on the rails as shown in the last illustration on the previous page, and the cross bar is adjusted for true level by moving the end piece carrying a scale, the reading on which gives the difference in level between the two rails. By setting the zero point on this scale to correspond with the cant it can be used equally well on curved track.

It is indicative of the possibilities of the system that the $\frac{1}{4}$ canister of chippings represents a lift of only $\frac{1}{64}$ in. when spread over a 30×10 in. area, and while it cannot be said that such a fineness of adjustment is actually

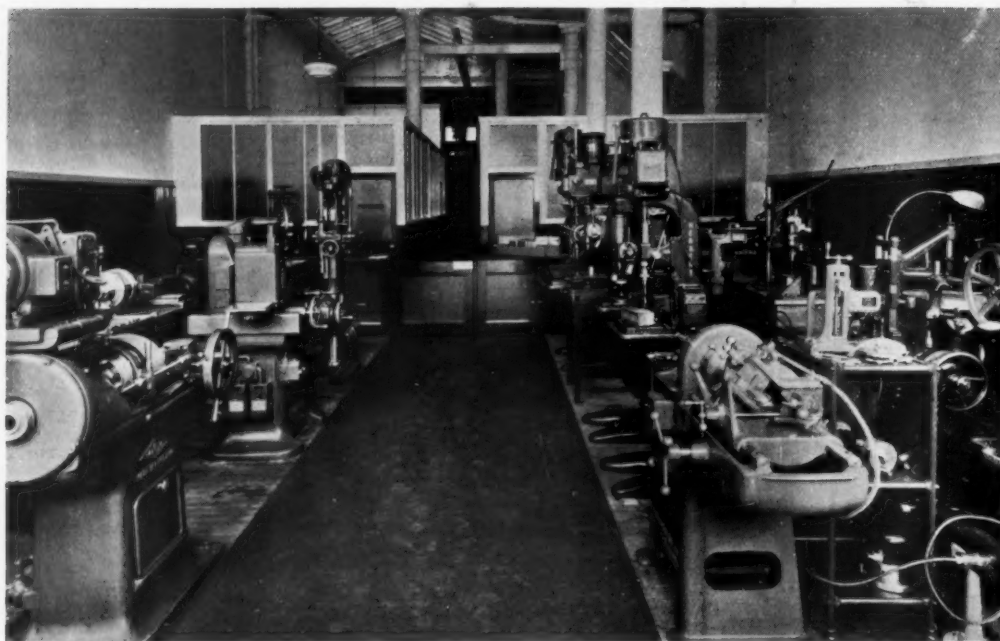
realised it has been found that quantities of chippings are so truly proportioned to requirements that, given an initially good foundation, the measured packing lasts from three to five times as long as that done by estimation. Engineers will realise that under such conditions track components, particularly at joints and in point and crossing layouts, will be more easily maintained in good order and, in consequence, have a longer life.

The development, from the original invention of Monsieur Lemaire,* of the system of measured shovel packing described above has been largely due to the perseverance of Mr. H. B. Everard, District Engineer, Derby South, L.M.S.R., and his assistant, Mr. Ian R. Frazer.

* Originally described in *THE RAILWAY GAZETTE* of July 3, 1931, and *The Railway Engineer* of April, 1932

MACHINE TOOL DEMONSTRATION IN GLASGOW

Exhibiting modern examples of Herbert drills and other types



IN order that production engineers may keep in touch with modern developments in machine tools, small tools, and machine shop accessories, Alfred Herbert Limited is arranging a demonstration from January 30 to February 11 at the firm's Glasgow showrooms, 36-38, West George Street. The machines, which will be shown in operation, include a number of Herbert all-electric drills, and there will be also on view a new machine, the Herbert No. 0 patent electric-pneumatic capstan lathe, which has many patented and original features. The capacity is $\frac{1}{2}$ in. and $2\frac{3}{4}$ in., and spindle speeds up to 6,000 r.p.m. are provided. Milling operations will be demonstrated on the Herbert No. 0 plain milling machine, and the Edgewick universal milling machine. A Scrivenner centreless grinder will be seen dealing with straight-through and shoulder grinding operations, thereby demonstrating the accuracy, finish, and production obtainable on these well-known milling machines. Other grinding operations will

be seen in progress on the Norton 6-in. \times 18-in. hydraulic surface grinder, a Norton tool and cutter grinder, and a Herbert Junior surface grinder. Demonstrations will also be given on a four-operation Brown and Ward precision threading machine, a Mills Oilaulic press, and an 18-ton Weingarten press.

A selection of Ardoloy tipped tools will be on view, and methods of sharpening will be demonstrated with a Lumsden tool grinder. Air-chucks and vices, milling cutters, and a wide range of other small tools and accessories will be available for inspection. We are asked to state that Alfred Herbert Limited extends a cordial invitation to engineers in the Glasgow area to visit this demonstration, which will remain open until 9.30 each evening. Specialists will be in attendance to discuss with visitors any of their production problems. The photograph reproduced shows a portion of the Glasgow showrooms of Alfred Herbert Limited.

INVALID SALOON FOR THE SOUTHERN RAILWAY

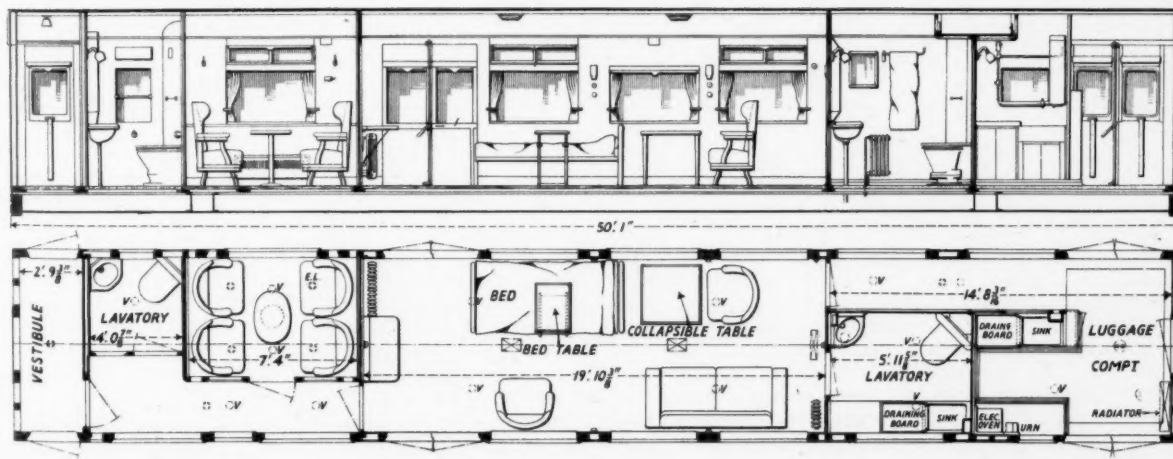
Details of a vehicle recently completed at the company's works, Eastleigh



THE Southern Railway has recently put into service for the conveyance of invalids a saloon coach specially adapted for the purpose at Eastleigh works to the design of Mr. O. V. Bulleid, Chief Mechanical Engineer. In its arrangement it accords hygienically with modern medical requirements, whilst pleasing surroundings for the invalid, ensuring comfort and adequate ventilation, are noteworthy features; in addition there are the usual requisites for the attendant. The layout of the compartments in the vehicle is as shown in the plan drawing reproduced; they comprise a commodious saloon with an adjoining lavatory which has been specially fitted to meet the requirements of a sick room, a passenger compartment, and a combined kitchen and luggage compartment.

Lichen-green Rexine has been used throughout the interior of the coach for lining the sides and ceiling; the

material used for the sides is shaded, and of deepest hue in the lower section. The ceiling is covered with a lighter shade than that used for the sides. A narrow skirting of stainless steel surrounds the interior of the vehicle at the sides. Waxed finish light oak deck pattern parquet flooring on timber floorboards is laid everywhere except in the lavatories and kitchenette, where Terrazzo mosaic flooring and Decolite respectively have been used. Mottled green rugs have been placed in the saloon and passenger compartments. Special attention has been given to medical needs in the design of the lavatory adjoining the saloon, this entailing the fitting of the compartment with an earthenware sink, cupboards for linen, and medical utensils. The surrounds and covering of the cupboards are of stainless steel, the tops of the cupboards thus forming a convenient table. Hot water is available at the sink and lavatory basin when steam is on the train. A



Sectional elevation and plan of invalid saloon, Southern Railway



Above: Interior of main saloon; and (right) view of the kitchenette showing electric boiler, oven, and hot plate

steam-heated radiator is also fitted in the compartment to keep the temperature similar to that of the saloon, in which two radiators are used for heating.

A convenience which will be appreciated is the provision in the kitchenette of an electrically-heated boiler, oven and hot plate, supplied with current from the coach-lighting batteries. In the kitchenette an earthenware sink, ice chest, and cupboard for the storage of cooking utensils are provided. Here again stainless steel has been used for the sake of cleanliness. The details of the furniture in the saloon are shown in the plan drawing, but it should be noted that the bed is supplied only on request. The settee is commodious and of comfortable design and proportions with drop ends, and there are in addition arm-chairs of the swivelling pattern in the saloon and passenger compartments. These are upholstered in Juniper green uncut moquette which, being of a darker shade, stands out in relief to the surrounding decoration. At the windows, lined curtains and blinds are fitted, the former of light green repp, in which gold is interwoven on the inside with beige lining on the outside. The blinds are of green Rexine, in keeping with the exterior colour of the coach.

All the metallic fittings are of stainless steel or chromium-plated, which adds to the attractive appearance of the compartments.

Electric lighting at 24 volts from a dynamo and battery mounted on the underframe and switches are fitted in the luggage compartment to allow for half or full lighting as required. The invalid compartment is well illuminated by two roof and six side lamps enclosed in white opalescent shades in order to give a restful light. Each lamp is controlled by a separate switch. A table lamp is also provided. The passenger compartment is fitted with four roof lamps mounted in mirror reflectors. The compartments can be ventilated without draught by opening the sliding panels above the large windows, and an electric fan is supplied for internal use in the large saloon. In order not to detract from the appearance of the saloon, each pair of double doors is fitted with frameless windows and one of each pair can be lowered as necessary. By Mr. Bulleid's courtesy we were recently able to inspect this saloon at the Eastleigh works. The appointments and scheme of decoration and finish impressed us as being admirably adapted to their purpose.

Terminal Stations and Cut-off Lines

No better indication of the growth of the railway system by the linking up of odd lengths of line and small separate railways can be obtained than by a long-distance journey on one or other of the well-known international trains. For example, on the way from Basle to the Balkans, there is a reversal at Zurich main station, another at Sargans, and then a third at Buchs, only ten miles further. After these Swiss reversals there are others at Salzburg, Vienna West, Vienna East, Budapest Keleti, and finally, whether the train proceeds *via* Nish or *via* Pancevo, at Belgrade main station. At none of these points was there any physical reason which would have prevented the construction of a through station. By the more southerly Simplon-Orient route, there are reversals at Milan

Central, Venice, Trieste Central, and Zagreb before reaching Belgrade, and although there are avoiding lines in every case, these towns are too important to miss. When the Tilbury-Dunkerque service began, the Dunkerque-Basle boat train made calls at Lille and Metz, with a reversal at each place, but the schedule was soon changed to miss these towns and provide a service intended solely for Strasbourg and south thereof. The Lille and Metz cut-offs have many counterparts, such as the Frome and Westbury avoiding lines in this country, and those circumventing Orleans and Tours in France. But although such cut-offs improve the operation of long-distance trains, they usually result in the adjacent towns suffering from an inferior service, or one involving a change.

RAILWAY NEWS SECTION

PERSONAL

L.N.E.R. GENERAL MANAGERSHIP

The following statement was issued by the L.N.E.R. on January 27:—

The directors of the London & North Eastern Railway Company announce today that Sir Ralph Wedgwood, Chief General Manager of the company since the year 1923, will retire from the company's service under the age limit on March 3 next, and that Mr. C. H. Newton, Divisional General Manager, Southern Area, has been appointed to succeed him as from that date.

It is announced that, owing to the pressure of other work, the Hon. Walter Runciman has resigned his seat on the Board of the London & North Eastern Railway Company, and that the Rt. Hon. Viscount Ridley, of Blagdon, Cramlington, Northumberland, has been appointed to fill the vacancy.

At a meeting of the Irish Railway Clearing House Committee held in Dublin on January 25, Sir Walter R. Nugent, Bart., was unanimously re-elected Chairman of the committee for the year 1939.

INSTITUTE OF TRANSPORT

The following elections of corporate members were made during December and January:—

Members

Mr. C. Byford, General Manager, Dover Harbour Board.

Mr. A. J. Pearson, Assistant to Vice-President (Finance and Service), L.M.S.R.

Mr. J. A. Ringers, Managing Director, Netherlands Indian Railway.

Associate Members

Mr. L. C. Barron, Great Western Railway.

Mr. S. R. Das, District Commercial Officer (Chakardharpur), Bengal-Nagpur Railway.

Mr. G. H. Grimshaw, Assistant Traffic Superintendent, Manchester Corporation Transport Department.

Mr. F. J. Speight, Secretary, George Ewer & Co. Ltd.

Mr. James R. Downes has been appointed Vice-President—Assistant to President, of the Pennsylvania Railroad.

Mr. W. N. Cayzer, a Director of Cayzer, Irvine & Co. Ltd., and of Clan Line Steamers Limited, has been appointed to succeed the late Mr. Charles Booth on the Mersey Docks and Harbour Board.

Mr. C. H. Newton, who, as announced on this page, has been appointed Chief General Manager of the London & North Eastern Railway in succession to Sir Ralph Wedgwood, who is retiring on March 3, entered the service of the Great Western Railway Company in September, 1897, obtaining experience in various sections of the Chief Accountant's Office. He transferred to the Great Eastern Railway on Octo-



Elliott

Mr. C. H. Newton

Appointed Chief General Manager, London & North Eastern Railway

[& Fry

ber 1, 1916, as Assistant to the Comptroller, becoming Assistant Accountant on November 1, 1919, and on May 1, 1922, he was appointed Chief Accountant. Consequent upon the formation of the L.N.E.R. on January 1, 1923, Mr. Newton was appointed Assistant Accountant of the new group; he succeeded to the position of Chief Accountant in 1928. He remained in that position until December, 1935, when he was appointed Divisional General Manager, Southern Area, the position he holds at the present time. While with the Great Western Railway he was certificated as proficient in signalling and railway working, and as a student of the London School of Economics (University of London) was awarded the Brunel Medal. Mr. New-

ton is the author of a useful text book on railway accountancy entitled "Railway Accounts," and is a Fellow of the Institute of Certified Public Accountants.

Lieut-Colonel C. E. Chase, V.D., who, as announced in THE RAILWAY GAZETTE of January 27, has proceeded on leave preparatory to retirement from the position of Chief Mechanical Engineer, Bengal-Nagpur Railway, was born on February 28, 1886. He joined the B.-N.R. in October, 1908, as an Assistant Locomotive Superintendent, was appointed to act as District Locomotive Superintendent in 1913, and was confirmed in that grade in 1919. In 1924 he was promoted to be Transportation Superintendent (Locomotive), Transportation Department, but in the following year returned to the Mechanical Department as Acting Superintendent, Running, a post in which he was confirmed in December, 1928. It was in January, 1932, that Colonel Chase was appointed Chief Mechanical Engineer. He was also Commanding Officer of the Bengal-Nagpur Railway Battalion, Auxiliary Force (India), in which unit he was awarded the Officers' Volunteer Decoration in February, 1932, and which he represented at the Coronation of King George VI.

Mr. Charles E. Brinley has been elected President of the Baldwin Locomotive Works, in succession to Mr. George H. Houston, resigned.

Mr. F. H. Pank has been appointed Chief Mechanical Engineer, Central Argentine Railway, as from January 1, in succession to Mr. W. P. Deakin, who has retired on pension.

Mr. Pank entered the service of the Central Argentine Railway in October, 1907, as Draughtsman in the Rosario workshops. He was later transferred to the company's workshops at Rio Cuarto, returning to Rosario in March, 1915, as Assistant Locomotive Works Manager. In the same month he volunteered for active service and proceeded to England, where he joined the Royal Garrison Artillery, in which he held the rank of Lieutenant. On his return to Argentina in 1919, he resumed his duties with the railway as Assistant Locomotive Works Manager. In January, 1925, he was promoted to be Locomotive Works Manager at Perez, and in July, 1931, was appointed Assistant Chief Mechanical Engineer. In 1937, Mr. Pank was en-

trusted by the railway with a special mission to Hungary in connection with the purchase of the company's Ganz diesel rail-cars.

Mr. Stanley Adams, whose appointment as Chairman of Thos. Cook & Son Ltd., and Thos. Cook & Son (Bankers) Ltd., was recorded in our issue of December 23, was for seven years previously Managing Director of Thos. Cook & Son Ltd. Mr. Adams enlisted in 1914 and served throughout the war. On his retirement he was associated with the late Lord Dalziel, and when the firm of Thos. Cook & Son Ltd. was fused with the Wagons-Lits Company, Mr. Adams became a Director and subsequently was appointed Managing Director. Mr. Adams is associated with a number of other business activities, including the Midland Bank and several commercial and industrial undertakings in the Birmingham neighbourhood. He is also Chairman of British Holiday Estates Limited, a company of which the capital is jointly subscribed by the L.M.S.R. and Thos. Cook & Son Ltd. for the purpose of developing holiday camp centres, the first of which is to be opened at Prestatyn this summer.

Mr. B. X. Jessop, whose appointment as District Passenger Manager, Leeds, L.N.E.R., was recorded in our issue of January 13, is the youngest son of Professor C. M. Jessop, Emeritus Professor of Mathematics at Armstrong College, Newcastle-on-Tyne; he was educated at St. Bees, and Clare College, Cambridge, and joined the London & North Eastern



Mr. Stanley Adams

Appointed Chairman, Thos. Cook & Son Ltd., and Thos. Cook & Son (Bankers) Ltd.

Railway in 1927. After experience in all the traffic departments in the North Eastern Area of that company, he was attached to the Southern Area Goods Manager's Office, occupying successively posts in the Development, Statistics, and Works Sections. During 1932 he acted as Secretary of the

London & North Eastern Railway Goods & Mineral Managers' Conference. In 1933, Mr. Jessop was appointed Assistant to the District Goods Manager, Leeds, with special responsibility for cartage, and two years later was appointed Chief Clerk, and subsequently Assistant, to the District Passenger Manager at Newcastle. He left Newcastle early in 1937 for the post of Assistant District Goods Manager at Leeds, which he now vacates.

M. Charles R. Cazenave, Assistant Manager of the French National Railways office in London, has been transferred to Brussels as Goods Representative of the S.N.C.F. for Belgium and Holland. M. Cazenave is a graduate of the Ecole des Hautes Etudes Commerciales, Paris, and after gaining railway experience, mainly on the commercial side, in France, was appointed in 1933 to be representative of the P.O.-Midi Railways for Great Britain and Ireland. His work here was concerned with the development of traffic between Great Britain, the South of France, and Spain. When the French National Railways Company took over the working of the former independent concerns on January 1, 1938, M. Cazenave was appointed Assistant Manager of the London office, dealing with passenger, goods, and publicity matters. A comprehensive lecture by M. Cazenave on the commercial organisation of the French National Railways, delivered to the Railway Students Association in London, was reported in our issue of December 9 last, and was commented upon editorially on page 985 of that issue.



Mr. B. X. Jessop

Appointed District Passenger Manager, Leeds, L.N.E.R.



M. Charles R. Cazenave

Appointed Goods Representative for Belgium and Holland, French National Railways



Mr. K. H. Morriss

Appointed Carriage and Wagon Works Manager, Eastleigh, Southern Railway

Mr. K. H. Morriss, whose appointment to the position of Carriage and Wagon Works Manager, Eastleigh, Southern Railway, was recorded in our issue of November 18 last, began his pupillage in January, 1922, at Brighton locomotive works, first under Colonel L. B. Billinton and later Mr. R. E. L. Maunsell. After experience in the drawing office there, he was transferred to Waterloo in a similar capacity. He spent a short period as Material Inspector, after which he returned to Waterloo. In January, 1929, Mr. Morriss was appointed Workshop Assistant to the Workshop Manager, Eastleigh Carriage Works, the position from which he was promoted in September last.

G.W.R. APPOINTMENTS

Mr. A. A. Davis will retire from the post of Divisional Engineer, Shrewsbury, G.W.R., on February 19, and will be succeeded by Mr. J. A. Denney, Divisional Engineer, Oswestry.

Mr. C. A. Neale, Assistant Divisional Engineer, Bristol, will succeed Mr. Denney as Divisional Engineer, Oswestry.

From *The London Gazette* of January 20: Regular Army Supplementary Reserve of Officers, Royal Engineers, Transportation: Lieutenant H. W. Ellis to be Captain (December 17).

Mr. E. J. Buckton, the Senior Partner of Messrs. Rendel, Palmer & Tritton, left London on January 26 for India and Iran. He will be away for two months.

INSTITUTION OF LOCOMOTIVE ENGINEERS

At a meeting of the institution on January 25, the following elections were made:—

Member

Mr. A. E. Blackman, Engineering Estimator, Swindon, Great Western Railway.

Associate Members

Mr. N. C. W. Bellerby, Assistant Mechanical Engineer, Paraguay Central Railway.

Mr. Yin-Tung Chu, Student Engineer, North British Locomotive Co. Ltd.

Transferred from Graduate to Associate Member

Mr. D. J. Batliwala, Assistant Transportation Superintendent, Madras & Southern Mahratta Railway, Madras.

We regret to record the death on January 28 of Mr. Thomas Barbour, J.P., Chairman of the Belfast & County Down Railway Company. Mr. Barbour, who was educated at Rugby, later joined the firm of Coome, Barbour Limited, with which his father was connected, and was many years in the service of that company. During the time he was employed with the firm, he spent much of his time on the Continent. He was a world famous expert on flax machinery. Mr. Bar-



The L.N.E.R. main line near Littleport under twelve inches of water during the recent floods in East Anglia

bour was also a Director of Fibres Limited, Belfast, and a Director of Holywood (County Down) Gas Company. Mr. Barbour was appointed a Director of the Belfast & County Down Railway Company in 1907 on the retirement of his father, Mr. James Barbour, and in 1932 was made Deputy-Chairman, succeeding the late Mr. Thomas Richardson, D.L., in the chair in December, 1936.

We regret to record the death at Ankara on January 18 of Herr Regierungsbaumeister a. D. Arthur Führ, Director of the Foreign Department of the Knorr-Bremse Aktiengesellschaft. Herr Führ was engaged on a business journey in Turkey. He

fell ill at Istanbul with influenza and had to go into hospital at Ankara, where he succumbed to pneumonia. Herr Führ had been closely identified with the Knorr-Bremse A.G. for 22 years, and had travelled extensively in nearly every part of the world.

LONDON TRANSPORT APPOINTMENTS

Arising out of the retirement from the London Passenger Transport Board on January 31 of the Comptroller and Accountant, Mr. C. S. Louch, the department will be divided between the Department of the Chief Accountant and the Department of the Chief Financial Officer; Mr. L. C. Hawkins will become Chief Accountant, and Mr. F. A. A. Menzler, Chief Financial Officer.



The town of Bungay, Suffolk, was almost isolated by floods in the Waveney Valley last week, and the L.N.E.R. Tivetshall-Beccles line suffered as seen above



A group at the L.M.S.R. London District Passenger Manager's office staff dinner, with Major H. E. Roberts, London District Passenger Manager, standing (See page 190)

[Photo]

[Swaine]



[Photo]

[Rawood]

Above : A group at the G.W.R. Superintendent of the Line's office staff dinner, January 27, showing Mr. F. R. Potter, Chairman, standing (see page 190)

Below and right : At the winter dinner of the Permanent Way Institution. Right : Mr. F. E. Harrison, President, in conversation with Sir Ronald Matthews. Below, left to right : Mr. W. K. Wallace, Mrs. T. M. Herbert, Mr. V. A. M. Robertson, Sir Ralph Wedgwood, Mr. R. Carpmael (speaking), Sir Ronald Matthews, and Lieut.-Colonel A. H. L. Mount

[Photos]

[W. M. Bond]



Permanent Way Institution Annual Dinner

Mr. F. E. Harrison, Engineer, North-Eastern Area, London & North Eastern Railway, took the chair at the annual winter dinner of the Permanent Way Institution, of which he had just been elected President, on Saturday last. The function was held at the Charing Cross Hotel, and those present included:—

Messrs. T. N. Bates, D. R. Bennett, E. E. Blick, K. Brinsmead, A. N. Brogden, R. Carmichael, H. W. Clark, F. H. Colebrook, J. H. Condy, W. S. Every, B. P. Fletcher, R. W. Gairns, R. S. Griffiths, W. T. Halcrow, W. Hepworth, T. M. Herbert, R. J. M. Inglis, H. James, J. A. Kay, F. Kerrigan, E. E. Lake, F. Lawson, A. J. Lyddon, Sir Ronald Matthews, Messrs. S. E. McLewin, J. Miller, Lt.-Colonel A. H. L. Mount, Messrs. H. C. Muggeridge, J. N. Peck, E. Perfect, H. M. Proud, A. S. Quartermaine, J. Ratter, H. E. Roberts, V. A. M. Robertson, C. P. Sandberg, W. Y. Sandeman, C. E. R. Sherrington, N. W. Swinnerton, L. Taylor, C. F. Tofts, J. C. L. Train, E. H. Tustain, W. K. Wallace, Sir Ralph Wedgwood, W. A. Willox, J. B. Woodman, and A. S. Young.

Sir Ronald W. Matthews, Chairman of the London & North Eastern Railway, proposing the toast of "The Permanent Way Institution," referred to the fact that the institution had now been in existence for 55 years, and that it could claim in many respects to be unique. Whereas there were many societies which confined their membership to particular grades or professions, the Permanent Way Institution embraced within its membership all grades who were in any way connected with the construction and maintenance of permanent way. The development of railways had played an important part in building up the trade which was the life-blood of this country, and it was therefore important that nothing should be allowed to destroy the efficiency of the railways. For this reason, the work being carried on by the institution was of importance, both to the industrial community and the travelling public. As each year went by, the demands made upon the ingenuity and watchfulness of the permanent way staff grew greater, due in large measure to the increased train speeds now operating. As things were, the trader and the travelling public demanded more rapid and more comfortable transport, and it followed that in satisfying these demands a greater responsibility was imposed upon those entrusted with the maintenance of the iron road. The Permanent Way Institution had solved the problem of bringing together the theoretical and practical mind, a combination which was essential if the best results were to be achieved. This constituted a most important work, and Sir Ronald desired, therefore, to wish the institution many more years of successful and useful life.

Mr. V. A. M. Robertson, Chief Engineer, London Passenger Transport Board, proposed the toast of "The President," and referred to his associa-

tion with Mr. Harrison, which dated back to 1924, when the latter was District Engineer at Newcastle. The institution was to be congratulated upon having Mr. Harrison as its President for 1939. Referring to Mr. Harrison's previous association with the institution, Mr. Robertson recalled that he had been a member since 1923 and besides fulfilling the office of Chairman of the Newcastle Section, had contributed many valuable papers at its meetings. The office of President was one which, of necessity, required a man who dealt with permanent way matters, and in this respect Mr. Harrison was well qualified to hold the position. He had started his railway career as a pupil with the former North Eastern Railway. He had then joined the firm of Sir John Jackson Limited, and was engaged on the extension of the Naval Dockyard at Devonport. Returning to the North Eastern Railway in 1906, he had been employed at Newcastle and appointed in 1909 as District Engineer for the Northumberland Area. In 1913, he became District Engineer at Newcastle, and in 1934 Assistant Engineer for the North-Eastern Area; he had been appointed to succeed Mr. John Miller as Engineer in February, 1938. An interesting feature of Mr. Harrison's election to the presidency of the institution was the fact that his late father, Dr. C. A. Harrison, had been President in 1907. Mr. Robertson also referred to other eminent engineers who had preceded Mr. Harrison in the presidential chair, and to the fact that with the one exception of Mr. Ellson (which was due to indisposition), all the chief engineers of the British railways were present to support Mr. Harrison. The new President was at present engaged upon carrying out some interesting tests with bolted track, and all engineers looked forward to benefiting, in due course, from the results of these tests.

Mr. F. E. Harrison, responding to the two previous toasts, said he desired first to express his keen appreciation of the honour conferred upon him by the members of the institution in electing him as their President. He had been interested to learn that it had been decided to hold the 1939 Summer Convention in Hull, and was sure that the convention would be highly successful. Sir Ronald Matthews had proposed the health of the institution in kindly terms, and in reply it could be said that the institution's health was good. The membership was greater than ever before, and this applied not only to the membership as a whole, but to the representation of each of the main line companies. On the financial side, the position was also very satisfactory, whilst the journal maintained a high standard. The principal work of the

institution was to be found in the activities of its local sections, where the blend of the theoretical and practical minds to which Sir Ronald Matthews had referred was much in evidence. It not infrequently happened that a theory was expounded at length, and the men who actually had the work to do were enabled to indicate its shortcomings. The Ministry of Transport had recently drawn attention to the fact that the cost to the country of maintenance and renewal of ways and works was approximately £20 million per annum, of which the cost of maintaining the permanent way represented an expenditure of some £7 million. It would, therefore, be seen that the work of the permanent way staffs was one of considerable financial importance. The public did not always realise the part played by those responsible for track maintenance in the running of high-speed expresses, nor could its members ever know the excitement of taking possession of a length of passenger track, repairing it, handing it back half an hour before scheduled time, and finally to see an express train pass without any movement at the rail joints. Different opinions were held as to the respective merits of bolted and screwed track; long fishplates and short; measured and other forms of sleeper-packing; and these were among the points which were discussed with advantage at sectional meetings. Mr. Harrison also referred to the growth in importance of the institution since it was founded, in the face of some opposition, in 1884, up to the present time, when it received the approval and support of every Chief Engineer in the country.

Mr. J. C. L. Train, Engineer, Scottish Area, L.N.E.R., proposed the toast of "The past-President," and referred to the fact that Mr. Carmichael had established four records during his presidency. He was the only President to have held office for two separate terms; he had attended an inaugural meeting of an overseas section (South India); led two conventions held out of England; and had held office in a year when the record number of 638 new members had been admitted to membership of the institution. Mr. Carmichael in his labours on behalf of the institution had shown himself to possess the qualities of comradeship and understanding in marked degree.

Mr. Carmichael, responding to the toast, said that the spread of knowledge among all grades of the permanent way staff by the principle of self-help was a tradition of the institution, and formed one of the outstanding features of its work. The membership was drawn from all grades of the engineering staff and the fact that so many of the papers read and discussed at sectional meetings were written by members and associate-members was a very healthy sign. Mr. Carmichael also referred to the research work undertaken from time to time by the respective railway companies, and

said that the chief engineers did not work independently of each other, but pooled the knowledge gained for the common good.

Mr. W. K. Wallace, Chief Engineer, L.M.S.R., proposed the toast of "The Visitors" and made special mention of the principal guest, Sir Ronald Matthews, who had succeeded Mr. William Whitelaw as Chairman of the L.N.E.R. at a very difficult time. All would wish him success in his task, because at this time the success of one railway was closely bound up with the success of others. Reference was also

made to the presence of Sir Ralph Wedgwood; Lt.-Colonel A. H. L. Mount, who, as Chief Inspecting Officer for Railways, conducted inquiries with fairness and justice to all; Mr. A. J. Lyddon, Deputy Chief Engineer for Roads, Ministry of Transport; Mr. W. T. Halcrow; and Mr. T. M. Herbert, Director of Research, L.M.S.R.

Sir Ralph Wedgwood, Chief General Manager, L.N.E.R., responded to the toast, and expressed appreciation of the hospitality extended to the guests. He also recalled his early training as an engineer and the consequent interest

which he retained in permanent way.

The toast of "Absent Friends" was proposed by Mr. R. W. Cairns, District Engineer, Glasgow Central, L.M.S.R.

At the annual winter meeting which preceded the dinner, a very satisfactory position in regard to both finances and membership was reported. Diplomas were awarded to the successful candidates at the Institution examinations held in 1938. Mr. R. Carpmael terminated his period of office with an interesting paper upon the life of Brunel, a predecessor in office as Chief Engineer of the G.W.R.

L.M.S.R. London District Passenger Manager's Staff Dinner

The fifteenth annual dinner of the L.M.S.R. London District Passenger Manager's staff was held on January 27, at the Strand Corner House, Charing Cross, W.C.2, when a company of 150 attended; Major H. E. Roberts, London District Passenger Manager, was in the chair, supported by his assistant, Mr. T. C. Byrom.

Others present included:—

Messrs. F. E. Bailey, G. R. Bradbury, W. O. Davies, J. B. Dunkley, S. H. Gould, W. M. Groom, J. Harrison, E. Hope, A. M. Harris (Pennsylvania R.R.), J. A. Kay (THE RAILWAY GAZETTE), J. Killingback, Lt.-Colonel E. ff. Lascelles, F. C. Young (*Modern Transport*), J. A. Picknell, H. G. N. Read, T. P. Strafford, J. H. Westwood.

The toast of "The L.M.S. Railway Company" was proposed by Mr. J. A. Kay, Editor of THE RAILWAY GAZETTE, and acknowledged by Mr. A. L. Castleman, London District Goods Manager.

Mr. Kay said that quite rightly the toast of the London Midland & Scottish Railway Company immediately followed the loyal toast, and in a gathering such as that, really it was not necessary to say more than "Gentlemen, the London Midland & Scottish Railway". Some idea of the size of the company, with its 226,000 employees, might be visualised by the fact that, if it were possible to close down the line for an evening, and the various sections of the staff were to meet, it would require 1,506 gatherings of similar size. Referring to the centenary of the opening of the London & Birmingham Railway, he said that the initials "L" and "M" in L.M.S. still reminded one of that grand original, the Liverpool & Manchester, the first public passenger railway.

Mr. Castleman, in replying, referred

to the fact that, although the past year had been a lean one for railways generally, it was of note that the London district of this great corporation had shown by far the greatest increase of any other district on the system, and, in fact, had contributed over a quarter of the passenger receipts for the whole line.

Major Roberts, in proposing the toast of "The Visitors," made the welcome announcement that the London district had won the Quota Cup for the first time, and that there were representatives present, besides those of the District Passenger Manager's staff, of the Chief Commercial Manager's Department, the Chief Operating Manager's Department, including district controllers, stationmasters, and passenger agents, the District Goods Manager's Department, the District Engineer's Department, and a representative of the Pennsylvania Railroad of America. Lt.-Colonel E. ff. Lascelles and Mr. J. Milligan responded.

G.W.R. Superintendent of the Line's Staff Dinner

Mr. F. R. Potter (Superintendent of the Line, G.W.R.) presided at the annual dinner and concert of his office staff on Friday last, January 27, at the Chiltern Hall, Baker Street, when a large gathering of the active and retired staff with their guests attended:—

The principal guests included: Messrs. R. Carpmael (Chief Engineer), H. Adams-Clarke (Staff Assistant to General Manager), F. C. A. Coventry (Superintendent of Road Transport), C. R. Dashwood (Chief Accountant), F. R. E. Davis (Secretary), H. T. Forth (Assistant Accountant), K. W. C. Grand (Assistant to General Manager), H. E. Hedges (Assistant to General Manager), J. A. Kay (Editor, THE RAILWAY GAZETTE), F. W. Lampitt (Commercial Assistant to Chief Goods Manager), A. Maynard (Chief Goods Manager), L. A. Mohan (Assistant Editor, *Modern Transport*), F. H. D. Page (Signal and Telegraph Engineer), H. W. Payne (Principal Assistant to Chief Goods Manager), H. J. Peacock (Divisional Superintendent, Cardiff), A. G. Pollard (Assistant to Chief Accountant), A. S. Quartermaine (Deputy Chief Engineer), S. G. Rowe (Asst. Secretary), R. A. P. Setterfield (Hotels and Refreshment Rooms Manager), H. Wheeler (Assistant to General Manager), W. A. Willox (Associate Editor, THE RAILWAY GAZETTE), H. A. G. Worth (Assistant Advertising Manager, London Passenger Transport Board).

Mr. J. W. Hearn (Trade Advertising Agent) proposed the toast of "The Great Western Railway Company" and

referred in general terms to the events of 1938 and to the "square deal" campaign.

Mr. C. R. Dashwood (Chief Accountant) suitably responded and congratulated the Superintendent of the Line and his staff on the excellent gathering.

Mr. A. G. Godfrey (Rates and Fares Section) proposed the combined toast of the "Retired Staff and Visitors," and expressed the pleasure of present members in welcoming so many of their late colleagues. To the visitors Mr. Godfrey also extended a very hearty welcome.

Mr. H. J. Rule, on behalf of the retired staff, and Mr. K. W. C. Grand, on behalf of the visitors, responded.

Mr. A. Griffiths (Rolling Stock Section) proposed the toast of "Our Chairman," and referred to the esteem in which Mr. Potter was held by the whole of his staff. Reference was also made to the interest displayed and assistance given by Mr. Potter at all times in connection with the staff's activities at Paddington. This toast was acclaimed amidst great enthusiasm with musical honours.

During the evening the opportunity was taken to refer to Mr. Potter's recent

60th anniversary, and to the desire of the staff to mark, in a tangible way, their appreciation of the "chief." On their behalf, Mr. A. H. Bird (Chief Clerk) presented Mr. Potter with a barometer, suitably inscribed, and conveyed the good wishes of the office. Mr. Potter responded to the toast and thanked the staff for the presentation and also for their loyal support and ready assistance accorded him at all times. An excellent programme of entertainment was provided by leading artistes.

CHEAPER L.N.E.R. CAMPING COACHES.—With a view to encouraging the spreadover of holidays, the L.N.E.R. is reducing the charge for camping coaches from 3 guineas to £2 10s. a week during the months of April and May and the last fortnight in September. At various points between Essex and Inverness-shire 119 coaches are available, and most of them are already fully booked for August. Minor improvements are to be effected to the coaches before they are placed in service this year, including the provision of loose cushions and certain additional equipment.

L.M.S.R. Operating Department Headquarters Dinner

Mr. T. W. Royle was accorded a vociferous welcome at the annual dinner of the Chief Operating Manager's headquarters staff at Euston, the first occasion on which he has occupied the chair since his appointment as Chief Operating Manager last year. The function was held at Coventry Street Corner House on January 30.

The guests included: Lord Stamp of Shortlands, Chairman and President of Executive; Sir Harold Hartley and Sir William Wood, Vice-Presidents; Mr. H. V. Mosley; Messrs. A. F. Bound, W. H. Clay, A. Eddy, C. E. Fairburn, Captain J. W. Harris, Messrs. G. Morton, J. Shearman, W. A. Stanier, S. J. Symes, W. K. Wallace; Mr. J. A. Kay, Editor, *THE RAILWAY GAZETTE*; Mr. D. R. Lamb, Editor, *Modern Transport*; Messrs. S. E. Parkhouse, J. N. Philipps, J. H. Robinson, and H. Rudgard (divisional officers).

Mr. Royle, in proposing the toast of "The L.M.S. Railway," expressed the honour shown to the Operating Department by the presence of Lord Stamp and the large number of guests. He mentioned that all the chief officers had accepted the invitation, but one or two had been kept away through unavoidable circumstances, as well as Mr. E. J. H. Lemon and Mr. C. R. Byrom (former Chief Operating Manager). Mr. Royle also referred to the illness of Mr. Ashton Davies and said how glad everyone was to hear that he was making a good recovery. In reviewing the year 1938 as affecting the L.M.S.R., he found it had not been a particularly cheerful one, instancing decreasing traffic receipts, the international crisis, a strike of railwaymen in London, the severest winter for many years, and the necessity to devote a good deal of time and energy to A.R.P. work, in essence a regular baptism of fire for the Operating Department during the first few months whilst he had been in charge. Notwithstanding these abnormalities, the department had, Mr. Royle said, finished the year with good operating results, and he thanked the whole of the staff of the department, including the divisional officers, for their loyalty and assistance during a very strenuous time. Continuing, he said that it was not easy to change over quickly from a process of building up to meet a rising traffic to the process of pulling down to meet a decreasing one, and at the same time improve the efficiency of the service to the public, but every demand upon the staff had been met most ungrudgingly. In thanking the officers and staff of all departments for assistance given to the Operating Department, he said that efficiency could not be obtained by working in water-tight compartments, the only effective measure being what was best for the L.M.S.R., and he was glad to say that this co-operation was evident in all dealings with all departments. Of the future of the L.M.S.R., present

indications were that 1939 would be difficult, but he could assure the President that the objective of the Operating Department would be to give him the greatest possible net revenue.

Lord Stamp, in replying to the toast, said he was gratified to hear the welcome given to Mr. Royle, and he had much pleasure in being present to do honour to the department. He referred to 1938 as an extraordinarily difficult year, and to the rapidity with which changing conditions moved with little or no time for effecting recovery, likening the situation to stepping on a top step which was not there. In expressing appreciation of what had been accomplished, Lord Stamp said it was perhaps an advantage that 1938 had been a strenuous year for the Operating Department as it would serve as a useful experience in meeting whatever lay ahead in 1939. He thought gross receipts would tend to decrease, but he knew that whatever effort might be required to improve the net revenue would be forthcoming. Notwithstanding the great traditions of the department, he was convinced that come what might it could achieve even greater things than any in the past. He epitomised the functions of the Operating Department as "fluidity with flexibility," a combination of which meant real efficiency. Lord Stamp in conclusion said that whatever worries there might be about the future, he had confidence that whatever task lay before the railways it would be accomplished in a manner that would not only redound to the credit of the L.M.S.R., but the country as a whole.

Mr. H. V. Mosley (Chief Executive Officer for New Works and Parliamentary Business), responding to the toast of "The Guests" proposed by Mr. Royle, took the opportunity of expressing thanks for the assistance he had always received from the operating staff. He was always anxious that the best possible facilities should be provided to enable the Operating Department to perform its functions in the most efficient manner. He paid tribute to the enthusiasm of the department and expressed thanks for the pleasure afforded the visitors.

Mr. C. Phizackerley proposed the toast of "The Chairman," and expressed the very great pleasure of the staff on Mr. Royle's return to the Operating Department as Chief of the "Senior Service." He said that the kindly characteristics of Mr. Royle were known not only to the staff at headquarters, but throughout the line, and it was fitting that the number present was a record for the event as it represented a desire to extend to Mr. Royle a hearty welcome, and at the same time afford an indication that

he would have the whole-hearted support and loyalty of the staff in the task he had undertaken.

Mr. Royle, in acknowledging the toast, said he was sure, notwithstanding what the future might hold, that any problems arising would be tackled and solved with the same degree of enthusiasm that he had already found in all ranks. He concluded with an appreciation of the welcome he had been accorded and of the loyalty and help already extended to him.

Departure of the Coronation Scot Train for America

On page 51 in *THE RAILWAY GAZETTE* of January 13, the new Coronation Scot train for the visit to America was described and illustrated. Also, in our last week's issue we illustrated the engine and the club car being slung aboard in process of being loaded into the hold of the *ms. Belpamela*. At the invitation of the Southern Railway we were present on January 26, when the *Belpamela* sailed from the new Ocean quay at Southampton docks, with the engine and train on board. She is due to reach Baltimore about February 14, and the subsequent doings of the train were described in our issue of January 13.

The engine and train were hauled "dead" over the Southern Railway from Willesden to Southampton docks on January 19, since when the loading and stowage of the 100-ton locomotive, its 28-ton tender, and the eight coaches weighing 262 tons, had been in hand. The engine and tender and one coach are stowed in the hold, having been lowered there by the *Belpamela's* own derricks, as depicted last week, and the other seven coaches are disposed as deck cargo, securely lashed in position longitudinally; a thick coating of wax will protect the lake-and-gold paint of the vehicles from the wind and spray during the 3,000-mile voyage to Baltimore. This is the first complete train to be shipped from Southampton docks.

Mr. R. A. Riddles, Mechanical and Electrical Engineer for Scotland, L.M.S.R., who is in charge of the tour from a mechanical standpoint, and Master Mechanic F. W. Soden, the Crewe Works Foreman who has been selected to accompany the train in the same connection, helped to supervise the important work of loading and securing the stock, which is resting on its wheels. Also present at Southampton docks at the sailing of the *Belpamela* were Colonel K. R. N. Speir, the L.M.S.R. officer in charge of the train during the tour; Mr. R. P. Biddle, Docks and Marine Manager, Southern Railway, and his Assistant, Mr. H. A. Short; the two latter officers have been personally interested in this unusual shipment from Southampton docks which has been carried out without a hitch in accordance with Southampton traditions. It entailed a track being laid close alongside the *Belpamela's* berth and other special arrangements.

STAFF AND LABOUR MATTERS

National Service Scheme

The provisional official schedule of reserved occupations in relation to the National Service scheme was issued last week. The schedule is arranged alphabetically in groups of occupations and is to be used without regard to the particular industry in which any occupation is followed, and references to men are to be read as including women. The occupations listed in the schedule are those in respect of which in the general national interests restrictions will be placed in peace time on the acceptance of volunteers for certain forms of enlistment or enrolment for service in time of war. The restrictions apply to acceptance for service (otherwise than in the volunteer's trade capacity, or, in the case of women, in nursing or first aid services) which will be whole-time in war but not in peace.

If an age is printed opposite an occupation in the schedule, this means that the restriction as regards that occupation applies only to volunteers of or above that age. If no age is printed opposite an occupation in the schedule, the restriction applies to volunteers in that occupation whatever their age.

Nothing in the schedule restricts:—

(a) acceptance for service which is whole-time in peace (e.g., service in the regular armed forces, the regular police forces, or the regular fire brigades);

(b) re-engagement for the same service of a person already engaged in a service;

(c) acceptance for whole-time service in war in the volunteer's trade or professional capacity;

(d) acceptance for A.R.P. service at the volunteer's place of employment;

(e) acceptance for service which will be only part-time in war, subject to the clear understanding that in the case of persons covered by the schedule work in the occupation listed in the schedule will have first claim on them in war-time;

(f) acceptance of women for nursing and first aid services.

The schedule is subject to revision from time to time. The following grades are included under "railway service":—

OCCUPATION	AGE
<i>Railway official, &c.</i>	
Manager, superintendent ..	25
Stationmaster, yard master ..	25
Inspector	25
Agent	25
Other executive official* (not specified above)	25
<i>Railway engine driver, motorman, fireman, engine-shed worker</i>	
Shed foreman, shed chargeman (locomotive), running shed foreman	—
Engine driver, locomotive driver (steam)	—
Motorman (electric)	25
Engine driver (internal combustion engine)	25

Engine driver (narrow-gauge railway)	25
Fireman (locomotive)	—
Engine cleaner	—
Other engine-shed workers* (excluding labourers)	25

<i>Railway signal lineman, platelayer</i>	
Chief lineman, ganger, sub-ganger	—
Signal lineman	—
Platelayer, lengthman, relayer	—

<i>Railway porter, goods checker</i>	
Yard foreman, leading porter, station foreman, parcel foreman, chargeman	25
Goods checker, caller-off, number-taker	30
Goods yard porter	30
Station porter	30
Loader, sheetor	30

<i>Other railway servants</i>	
Foreman, chargeman	—
Ticket collector, ticket examiner ..	30
Guard, conductor, brakesman	—
Train examiner, carriage, wagon, brake, &c., examiner	30
Signalman	—
Pointsman	25
Capstanman	25
Shunter	—
Spragger	25
Crossing keeper, level-crossing man, gateman (level crossing)	30

Other railway occupations specifically mentioned in the schedule in occupational order are: railway clerk (age 25), railway police, and railway surveyor. All other railway occupations which are reserved are included in occupational order without specific reference to the railway industry.

* In occupations not otherwise specifically reserved

Railway Staff National Tribunal

The A.S.L.E.F. Case

Mr. Squance, presenting the claims of the Associated Society of Locomotive Engineers and Firemen on January 27, submitted to the tribunal a number of statements and gave an outline of the negotiations which had taken place prior to the claim being referred to the tribunal. He explained that 35,359 drivers and motormen, 33,383 firemen, and 7,541 engine cleaners were affected by the society's proposals. These were the numbers shown in the Ministry of Transport Returns for March 12, 1938, but since that time owing to the depression he said the numbers had been considerably reduced.

Statement No. 1 submitted by the society was a document setting out the present agreements in regard to rates of pay and conditions of service and the effect of the society's proposals thereon. Statement No. 2 was an extract from Determination No. 10 of the Australian Commonwealth Public Service Arbitrator; and Statement No. 3 was an extract from a broadcast talk in the B.B.C. Regional Programme on October 13, 1937. During the course of the presentation of his case Mr. Squance submitted a copy of a book

entitled "Modern Locomotives of the London Midland & Scottish Railway," and a number of photographs which included one of the *Rocket*, loaded and empty tenders, and the reversing lever of a shunting engine.

Mr. Squance opened his statement by saying that the main basis on which he would submit the case on behalf of the Associated Society of Locomotive Engineers and Firemen was that satisfactory salaries, wages, and conditions of service commensurate with the necessary training, skill, responsibility, physical and optical fitness required to fulfil the duties to be performed must be the first charge upon industry. He said that the present hours, wages, and conditions of service were embodied in the National Agreements of 1919-20. The rationalisation of the railway system of this country, facilitated as it undoubtedly was by grouping, fell heaviest upon the footplate grades, who were compelled to manipulate heavier locomotives and trains at ever-increasing speeds for greater distances than would have been possible had no grouping been effected subsequent to 1919-20. The introduction of new signalling arrangements more adequately to meet modern requirements and public safety, and which were a decided

improvement upon the old methods, increased the mental strain upon the footplate men owing to the varying systems in operation. The continual firing of the modern locomotive necessary for the punctual operating of the modern schedules of trains, he said, did not permit the firemen participating in the look-out for signals as frequently as formerly. This, he said, threw full responsibility with added mental strain and anxiety upon the engine driver for longer distances with faster and heavier trains.

In addition, the numerous economies arising from the new methods of working reduced the number of staff required and retarded promotion. In pre-grouping days, he said, promotions in each grade took effect ten to twelve years earlier than was the case today.

In the claim for increased wages, said Mr. Squance, the society sought to establish the principle of standard daily rates of pay for all classes of work performed by drivers, firemen, and engine cleaners, a principle which was the fundamental basis upon which the national agreements were founded. An anomaly which the society wanted removing was the arrangement under which men on Sentinel and other similar steam locomotives were paid a fixed rate of 12s. a day. He said that neither very heavy and powerful loco-

motives nor the light units were in operation at the time the national agreements were made, and, while these agreements laid down wages and conditions which were fair remuneration for the duties and responsibilities the footplate men were then performing, he argued that they were not intended to provide adequately for future developments. Mr. Squance referred to the photograph of the *Rocket* which he had submitted to the tribunal, and he made comparisons between it and the Garratt engines which were described in the booklet which he also submitted. He made reference to an article in THE RAILWAY GAZETTE dealing with a summary of the work and achievements of the London Midland & Scottish Railway Operating Department during the years 1927-37 and to the *On Time* publication issued by the L.M.S.R.

In summing up his submissions in regard to the claim for higher rates of pay, Mr. Squance said that the speeding-up and many forms of rationalisation introduced in recent years were not confined to freight and passenger express trains, but the new methods had been extended to all local trains and even shunting operations. The manipulation of more powerful locomotives, heavier trains operated at much higher speeds, new and improved but more complicated signalling arrangements, the mastering of additional necessary mechanical devices on locomotives, and so on, compelled a higher standard of efficiency from the employees whose duty it was to ensure safety, punctuality, and smooth operation of these massive monsters of motion. Modern working schedules of train working from the shunting engine to express passenger and freight work became more trying and difficult with time, whether they were operated by day or night, in good or adverse weather conditions, and the request for increased wages for these onerous and exacting duties was fully justified and merited concession.

On the claim for increased holidays, Mr. Squance made reference to the report of the Government Committee on Holidays with Pay, and quoted extensively from Determination No. 10 of the Australian Commonwealth Public Service Arbitrator, saying that the locomotivemen of Australia in most cases enjoyed 28 days' holidays with pay each year. The request for additional holidays, he said, was submitted on the grounds that modern transport requirements demanded a heavier toll of physical and mental energy from the grades which he represented. The rationalisation and intensification of duties that enabled modern transport to reach its high degree of efficiency, speed, and punctuality weighed very heavily upon the footplate grades. They expended more human energy in the performance of their duties and their only opportunity for recreation and to retain physical fitness and mental alertness to ensure safe, efficient,

and smooth working, would be through the conceding of the application.

Dealing with the claim for an increase in the payment for Sunday duty, Mr. Squance said that it could not be doubted that Sunday work had increased by the running of day and half day excursions and he quoted from THE RAILWAY GAZETTE of January 14, 1938, which stated: "a marked feature of these excursions during 1937 was the great increase in Sunday travel, and the L.M.S.R., L.N.E.R., and G.W.R. Companies are, therefore, continuing the arrangements introduced last year." He gave a long account of the duties of enginemen and said that even shunting duties were intensified on Sunday, wherever possible. Here he referred to the photograph of the reversing lever on a shunting engine, and gave particulars of the approximate number of times it had to be moved backwards and forwards in an hour. He said the society attached great importance to the claim as Sunday duty meant loss of social amenities and sacrifice by the men concerned and their families.

On the last item of the claim Mr. Squance said the society was once again asking for the abolition of the nine-hour roster with the object of returning to the position which existed prior to Decision No. 2 of the National Wages Board. He argued the claim on the grounds of intensification and speeding up and said the society was asking for the effective operation of an eight-hour working day. Mr. Squance went on to deal with the financial position of the companies, during which he made reference to railway capital, traffic receipts, net revenue, dividends, co-ordination of road and rail services, the closing down of unremunerative branch lines, and the cause and effect of competition from road transport. Mr. Squance then made reference to the broadcast in the B.B.C. Regional programme on October 13, 1937, which was an account by Mr. Sturge Whiting of a journey while riding on the engine of the 10.0 a.m. from St. Pancras to Leicester, and concluded by asking the tribunal to give the claims its generous and sympathetic consideration.

The R.C.A. Case

Mr. Stott, presenting the claims of the R.C.A., said that speaking generally, the salaried and supervisory grades had no better conditions in 1939 than they had in 1919, though he acknowledged that improvements had taken place in regard to superannuation, and he admitted that in so far as the cost of living had fallen since 1919, the railway workers had benefited in common with other workers and with railway shareholders. He said that he would like to take the claims in the following order: first, 40-hour week; second, night duty; third, annual holidays; and fourth, salaries, though in importance they should be taken in the reverse order.

Dealing with the claim for a reduction in the hours of work, Mr. Stott reminded the tribunal of the argument which he had adduced before the tribunal in July, 1937, when the association submitted a claim for a reduction in hours to 36 a week. There were, however, additional arguments which he wished to place before the tribunal at the present time. He said that since the national agreements came into operation, many railway clerks had had to buy houses, and as quite a lot of them now lived some distance away from their work there had been an increase in the time that the staff were away from their homes from start to finish, and travelling time could not be regarded as leisure time. Another argument was that the stress and the strain in railway offices today was so intense that hours of duty should be reduced. Included in the claim for a reduction of hours was a provision that the overall working day, including meal times, should not exceed nine hours, and on this Mr. Stott said that there was no agreement as to the extent of the spreadover. He said that when men who lived a distance from their work had a spreadover of ten hours they could easily be away from home for 12 hours, and the R.C.A. considered that it was too long, especially for indoor workers.

In connection with the claim for extra payment for night duty, Mr. Stott explained the present arrangements and pointed out that controllers, supervisors, and Railway Clearing House numbertakers already received extra payment at the rate of time and a quarter for the hours 10 p.m. to 4 a.m., and it was for the other grades whom he represented that the claim was made. He said that the association had decided to make this claim because it was considered that for men who were always on night duty, that is, finishing after 10 p.m. or commencing before 4 a.m., the night off in ten should not be given in exchange for the extra payment. The association wanted both the night off in cases where the night duty was continuous, and the extra payment as well.

The association felt that as the tribunal had shown a disposition to treat the wages grades in the same way as salaried grades, or conversely, not to grant to the salaried grades what it could not see its way to grant to the wages grades, it had decided to ask that the extra payment which wages grades had for time between 10 p.m. and 4 a.m. should be extended to the salaried grades. Mr. Stott criticised the arrangement under which clerks working intermittent night duty received one night off in 15, and outlined the reasons why the association had asked for its termination. Some of the reasons were because the arrangement did not apply to assistant stationmaster and yard masters; because the arrangement gave nothing to men who worked only part of the time

between 10 p.m. and 4 a.m. or who worked all of that time less frequently than one week in three, and because certain clerks who received the night off on a Saturday/Sunday turn when working 10 p.m. to 6 a.m. lost the extra payment for the Sunday morning portion of the turn. He submitted a statement to demonstrate the latter point.

The claim in connection with holidays, Mr. Stott said, was put forward because the association considered that holidays should be taken between May and September, and that length of service was a fairer basis of determining what holidays a man should receive than the existing classification basis. Behind the desire for the length of service basis, he said, was the recognition that only a minority of the staff would get beyond Class 3 and that the men in middle life really needed more than twelve days in which to recuperate and that those who were approaching or had passed 50 years of age required more than fifteen days. The main reason, however, for the claim, he said, was because of the stress and strain inside railway offices. He contended that this view was supported by the fact that many men retired as soon as they reached 60 years of age.

Pressure of work was also a reason behind the association's claim for improvements in salaries, the details of which Mr. Stott explained very fully. He dealt with the various sections of salaried staff separately, beginning with stationmasters, goods agents, yard masters, and passenger and parcels agents, the numbers of which had decreased since 1920 by 2,420, and the reasons he advanced for this reduction were: amalgamation of the railways; pooling; closing of stations; and placing of two or more stations under one stationmaster. The average earnings of stationmasters were lower than in 1927, and he concluded that this was on account of their not being required to work on Sundays or be on call on Sundays. This section of the salaried staff, he asserted, had more pressure of work than ever before. Dealing with supervisors, he said there had been reductions in the number employed and they had not been exempt from the general stress and strain and speeding up. Controllers had increased in numbers since 1924. He explained their duties in some detail, and strain was an argument he advanced in support of the claim for an increase for this section of staff. The number-taking staff of the R.C.H. had decreased on account of the amalgamation of the railways, and lack of promotion was one of the reasons behind the claim in respect of that staff. Women clerks, he said, had increased as compared with pre-war days but there were fewer employed now as compared with 1920. He submitted that many of the women for whom the claim was made were being given work that women did not do at the time of the classification and work that

it was not then contemplated women would do. A reason advanced in support of the claim for an increase for members of the male clerical staff was that their responsibilities had increased, and Mr. Stott quoted a number of changes which had taken place which had tended to increase their responsibilities.

Mr. Stott submitted to the tribunal a statement showing the average actual weekly expenditure of 277 clerks on the maximum salary of Class 5 which, after explaining in detail, he said he had submitted to show what was done with the earnings of a section of the black-coated workers on the railways, and to prove that they needed more money. Mr. Stott concluded by quoting from the writings of Sir Arthur Salter, and said that all that he was claiming could be summed up in the following sentence: "I asked for a little more leisure, and a little more money because I believe they would contribute towards the liberation, the development, and the enrichment of the personalities of the men and women and the children whom I represent."

Railway Companies' Reply

Mr. G. L. Darbyshire, replying on behalf of the railway companies, said that the staff covered by the various claims numbered approximately 333,000 conciliation staff and about 82,000 salaried staff, a total of 415,000. In addition 1,600 staff employed in the Railway Clearing House and 6,000 staff employed on joint lines would be covered by the claims. The total number of staff employed was 581,000, and the staff involved in the claims before the tribunal thus represented 71 per cent. of the total staff. A statement submitted to the tribunal showed that the estimated annual cost involved in the claims was:—

N.U.R. Claims

Minimum rate of 50s. for any adult in conciliation grades...	£ 1,087,000
Abolition of spreadover turns...	184,000
Increase in annual holidays from 6 days to 12 days	970,000
Abolition of extended rosters	149,000
Minimum of 4 hours at Sunday rate for each time of signing on duty on Sundays	111,000
Short turns (in 5 long turns and 1 short turn rosters) to be worked on Saturday mornings	46,000
	<hr/> £2,547,000

A.S.L.E. & F. Claims (Drivers, firemen, and cleaners)

Increases in rates of pay	£ 787,000
Increase in annual holidays from 6 days to 12 days	307,000
Minimum payment of 8 hours plus half time for all time worked, for each time of signing on duty on Sundays	68,000
Payment at Sunday rate for the Monday portion of turns commencing on Sunday extending into Monday	16,000
Abolition of extended rosters	91,000
	<hr/> £1,269,000

R.C.A. Claims

Increases in scales of pay	£ 1,326,000
Extra payment in respect of night duty between 10.0 p.m. and 4.0 a.m.	72,000
Reduction in hours of duty to 40 a week	1,699,000
Restriction of over-all hours to not more than 9 a day	120,000
Alteration in basis of annual holidays	234,000
	<hr/> £3,451,000

Mr. Darbyshire said that he would examine the claims in the light of the previous findings and principles laid down by the tribunal, but before doing so he would examine the position since 1930, and submitted a statement showing the net revenue of the companies during the years 1929-37. He summarised the position by saying that with a net revenue of £37.7 millions in 1930 and a falling tendency, the railway companies were enabled to obtain relief in labour costs to the extent of £4.5 millions a year. With a net revenue of £35.7 millions in 1936 and a rising tendency, which very soon after ceased, the companies had lost all this relief in labour costs.

Mr. Darbyshire then dealt with the disparity of the prospects as they appeared in August, 1937, the date of Decision No. 3 of the tribunal, and the realised position of the companies at the present time. The net revenue of the companies for 1937 was £37.9 millions. Since the first 10 weeks of 1938 the trend of railway traffic had been seriously downwards. The total decline for the year was £7 millions compared with 1937, and over £13 millions compared with 1930, the year in which the railway companies were granted relief in their labour costs by the National Wages Board.

In addition to the heavy decline in railway traffic receipts in 1938, he said there were heavy declines in the revenue from the various ancillary businesses of the companies. On the question of expenditure, apart from the cost of the tribunal's Decision No. 3, amounting to £2.9 millions for the full year, there had been further increases in the prices of coal and other materials beyond those known in the summer of 1937. Based on the facts which he had given, he said it was clear that not only had the realised net revenue position not justified the withdrawal in 1937 of the relief given to the companies in March, 1931, but the prospects which were taken by the tribunal as a justification for this withdrawal had not been realised. It was submitted that there was no possible justification for acceding to the claims now submitted by the trade unions involving an estimated additional cost of £6½ millions, which would be increased to £25 millions if corresponding concessions were extended to the other sections of staff not before the tribunal.

Mr. Darbyshire again compared the net revenue of the companies in 1937 with that in 1930, on which the rail-

way companies were granted relief by the National Wages Board in their labour costs; he said that the companies had taken no action in the direction of again seeking relief in labour costs, but they had indicated to the trade unions that it would be necessary for them to give close consideration to the necessity for doing so when the results for 1938 were known.

Mr. Darbyshire then proceeded to examine the various claims in detail. Dealing with the N.U.R. claim for a 50s. minimum wage, he said that a similar claim was considered by the tribunal as recently as 1937, when it awarded an increase of 1s. a week to adult staff whose base rate was less than 45s. a week, and an increase of 6d. a week to those whose base rate was 45s. a week. The tribunal had also awarded certain other concessions. The total additional cost to the companies of these concessions was £370,000 a year. It was revealed that there were approximately 101,000 conciliation staff with rates of pay of less than 50s., but only 58,000 of such staff whose earnings were below 50s. a week. He suggested that there were several factors which should be taken into account when considering any question of the inadequacy of the minimum rate, *viz.*, free or cheap railway travel, the provision of uniform clothing, and exception from Unemployment Insurance. The value of free or cheap travel and the provision of uniform was estimated to be worth no less than 2s. 6d. a week. Other factors to be taken into consideration were regularity of employment and promotion.

It was pointed out that the rates of pay of the various grades of railway employees had always been fixed in relation to the responsibilities of those grades, and it was contended that the present proposal would entirely destroy the relationship between the grades, as all grades rated below 50s., together with those rated at 50s., would all be paid on a common rate. It was obvious that this position could not be maintained and the proposal could not be adopted without involving consequential increases for other staff. A general increase of 9s. a week for all conciliation staff would cost the railway companies £9 millions a year.

Comparing wages with pre-war, Mr. Darbyshire said the average pre-war rate of the lowest paid conciliation grade was 19s. 2d. a week. The minimum base rate was now 41s. a week and the minimum current rate 43s. a week, representing increases over pre-war of 114 per cent. and 124 per cent. respectively. Cost of living had increased by only 55 per cent. so that the minimum rate of 43s. a week represented a betterment in real wages of 45 per cent. Reference was made to the question of the ability of the industry to pay the higher wages claimed and the comments made by the tribunal in regard to a similar claim in August, 1937, were quoted, and the financial position of the companies at that time

contrasted with their position today. Dealing with the A.S.L.E. & F. claim for increases, Mr. Darbyshire contended that there had been no increase in responsibilities to justify an increase. The duties of enginemen were substantially the same as they were when the national agreements were made. Such increases as had taken place in the size of locomotives had been accompanied by improvements in locomotive design which were to the benefit of the enginemen. Men who were working the larger engines were generally working on a mileage basis and were receiving considerably higher earnings than those of an ordinary engineman. Drivers and cleaners, however, had been granted improvements in wages scales since the National Agreement of 1919, in addition to having benefited in real wages by reason of the fall in cost of living, and had been placed in a more advantageous position than conciliation grades generally.

Dealing with the arguments of the A.S.L.E. & F. regarding the use of larger engines, Mr. Darbyshire stated that engines of the heavy type drawing main express passenger trains represented less than 2 per cent. of the total engine stock. The improvements which had been made in the design and construction of modern engines had made them easier to handle than the older type of locomotive, and the larger engines had not called for a higher standard of efficiency on the part of the driver or fireman.

As regards the society's statements relating to acceleration of trains and increased mileage, it was pointed out that acceleration of services did not always represent running at greater speed, and in some degree was achieved by eliminating stops. In a number of cases the effect of accelerated services was to increase the earnings of the enginemen and reduce their hours of duty. Examples were given of a number of instances in which enginemen had benefited in this way.

Dealing with the claims of the Railway Clerks' Association for increased scales of pay for salaried staff, attention was drawn to the fact that the present scales of salaries were agreed as applicable to a time when the cost of living figure was 125 per cent. above pre-war, whereas today it was only 55 per cent. above pre-war and the salaried staff enjoyed a betterment in terms of "real wages" of no less than 45 per cent. as compared with the time when the salary scales were agreed. It was contended that there was no ground for any general improvement, particularly as the service rendered was substantially the same as in 1919 and the position of the industry was not better, but, on the contrary, worse.

The statement made by the association that the quantity of the work required from the salaried grades had increased and the quality improved from what was the case when the scales

came into operation was disputed by Mr. Darbyshire. He agreed that some changes had been brought about by the changed requirements of the industry, but he could not subscribe to the suggestion that either the quantity or quality of the work of the salaried grades had improved, nor did he agree that there was great stress or strain. He pointed out that the classification system provided varying salaried rates for varying responsibilities and was designed to meet changes in the responsibilities attaching to individual positions, and any individual who considered that the responsibilities of his position had increased in such a way as to justify improved classification had ample means through the sectional councils of securing that the facts concerning his case were properly considered.

Mr. Darbyshire contended that the claim of the shareholder to a better return on the capital invested in the industry must necessarily receive consideration. The shareholders' return had been disastrously reduced from the level of 1919, and it was contended that until this claim had received more satisfaction than appeared likely at the present time, the claim for increased scales of pay for salaried staff could not be established. The financial position of the companies at the present time was much more unfavourable than in 1925 when the previous claim of the association for improved salaries was rejected by the National Wages Board.

So far as the claim on behalf of the Railway Clearing House numbertakers was concerned, Mr. Darbyshire pointed out that the present rates of pay were determined by the National Wages Board in October, 1922, and he contended that there had been no material change in the relationship of work performed by these men and corresponding staff in the railway service and railway staff generally since that date.

Dealing with the claim of the Railway Clerks' Association for a 40-hour week, Mr. Darbyshire drew attention to the fact that the tribunal dealt with an application of a similar character as recently as August, 1937, when it found against the claim, and he said that the reasons which led the tribunal to find against that claim were equally applicable in relation to the present claim. He contended that the inequality of hours of certain staff on work of equal value, due to the reservation in the National Agreement as to the then existing instances of shorter hours, could equally be met by levelling up the shorter hours to the universal 48 a week, instead of levelling down the hours to a new, and quite exceptional level of 40. He suggested that the claimants had produced no convincing evidence to show that the present standard hours of duty were unreasonable for clerical staff, or that they were unfair in comparison with other grades.

With regard to the claim by the National Union of Railwaymen for the

termination of spreadover working, Mr. Darbyshire explained the considerations which led to the introduction in 1922 of the original arrangements for spreadover turns and the subsequent history. He said the flexibility which these conditions were designed to give was more than ever necessary today to meet the requirements of the public and the exigencies of the service. The spreadover, he said, made possible this flexibility which the National Wages Board was satisfied was necessary, and it continued to be essential to railway operation. He drew attention to R.S.N.T. Decision No. 2 and pointed out that this decision again recognised the spreadover arrangement as useful and suitable for the grades to which it was now applied.

On the claim of the Railway Clerks' Association that no turn of duty should exceed 9 hours, Mr. Darbyshire contended that it would be anomalous for salaried grades to be in a different position from wages grades in relation to spreadover working, and he submitted that there could be no justification for discrimination between the salaried and wages grades as to the length of the spreadover. In connection with the claims by the National Union of Railwaymen and Associated Society of Locomotive Engineers and Firemen for the abolition of 9-hour rosters, Mr. Darbyshire drew attention to the fact that the unions had previously sought a reversal of the existing authority on this matter, but the National Wages Board and the Railway Staff National Tribunal had consistently confirmed the right of the companies to roster men up to 9 hours where economy would accrue. In Decision No. 2 the tribunal held the arrangement to be "necessary to the efficient working of such an industry as the railways." He said the authority to extend the roster beyond 8 hours was utilised by the companies only when it was really necessary, *i.e.*, where more satisfactory operation could be obtained, yielding economy. There had been a reduction in both the rostered and the actual turns of duty extending beyond 8 hours since the question was last before the tribunal. The restriction of rosters to 8 hours a day would result in an increase in lodging turns, which were expensive to the companies and not popular with the men or with the unions.

With regard to the claim of the National Union of Railwaymen that, when staff in conciliation grades were rostered for five long turns and one short turn of duty, the short turn should be on Saturday, Mr. Darbyshire quoted a letter issued by the Railway Executive Committee in January, 1919, containing instructions for the purpose of giving effect to the decision of the Government to concede the principle of an 8-hour day. This letter indicated that certain past practices were to continue, including the one "where hours have been so arranged

as to give half a day off on one day of the week." No mention was made of it being a particular day in the week, either Saturday or any other day. He said it would be imposing an onerous and quite unjustifiable condition upon the companies to require that there should be rigid adherence to the working of the short turn on Saturday morning. The working arrangement of the companies required to be adapted to the varying requirements of the localities throughout the country, including the varying early closing days. The companies saw no reason why the men should not work a short day on the day when their services were not required for a full day, and a full day when their services were required for a full day.

In respect of the claims of the National Union of Railwaymen and the Associated Society of Locomotive Engineers and Firemen for increased holidays with pay, Mr. Darbyshire outlined the history of previous claims of a similar character and referred to Decision No. 3 of the tribunal in which it decided against a similar claim, but granted a day's holiday with pay during the customary holiday season to staff coming within the purview of the tribunal if they were required to work on Whit Monday or August Bank Holiday, or two days' holiday with pay if required to work on both days. The arguments of the unions in support of their claims were contested and reference was made to the report of the Committee on Holidays with Pay. It was submitted that as regards holidays with pay the conditions of the railway service were definitely ahead of the arrangements applying to the great majority of workers in other industries. So far as the references made by the unions to the practices in other countries were concerned, it was suggested that it was far more important to consider the practice in this country.

As to the claim of the Railway Clerks' Association in regard to holidays, Mr. Darbyshire said the effect would be that the holidays at present granted to a considerable number of staff would be reduced, but the net result would be that the total leave would be greatly increased. He submitted that it was a sound arrangement for positions of higher responsibility to carry with them longer holidays, and that it would be anomalous for an individual in a lower position with longer service to be granted holidays in excess of those granted to an individual in a higher position, but with shorter service.

On the claims of the National Union of Railwaymen and of the Associated Society of Locomotive Engineers and Firemen relating to minimum payments for Sunday duty, Mr. Darbyshire referred to the circumstances in which the minimum payments provided in the national agreements were modified by the National Wages Board in 1923. He also pointed out that simi-

lar claims were considered by the tribunal in their Decisions Nos. 2 and 3, and were rejected.

Dealing with the claim of the Associated Society of Locomotive Engineers and Firemen in regard to the payment for Sunday/Monday turns of duty, he contended that there had been no change in circumstances since Decision No. 12 of the National Wages Board in 1923 which would justify any alteration.

As regards the claim of the Railway Clerks' Association relative to payment for night duty, he referred to previous claims for additional payments to clerical staff in respect of night duty which had come before the National Wages Board and the tribunal. Night duty, he said, formed part of the ordinary conditions of railway employment and it was submitted that there was no justification for going beyond the provisions already made in respect of night duty for clerical staff. The average weekly working hours of the great majority of the clerks who performed night duty on ten or more nights consecutively were only slightly in excess of 37 a week.

Mr. Darbyshire summarised his submissions on the claims and then proceeded to deal with the general considerations advanced by the unions. In commenting on the allegations of the Associated Society of Locomotive Engineers and Firemen in regard to increased intensity of work, it was not accepted by the railway companies that enginemmen were suffering any hardship from the introduction of modern engines and modern methods. In the view of the railway companies, the many improvements in the design of locomotives and in signalling practice, which were detailed, lightened the work of the men and lessened the strain.

Dealing with the representations of the Associated Society of Locomotive Engineers and Firemen in respect of lack of promotion and redundancy, Mr. Darbyshire pointed out that during periods of depression employment must be contracted, resulting in fewer opportunities of promotion, but every effort was made to minimise the adverse effects upon the staff. As to the suggestion that men, particularly enginemmen, were getting promotion at a later age than formerly, reference was made to the proceedings before the tribunal in 1936 when the fact that the tribunal recognised that the staff had been under disadvantages in regard to lack of promotion, reduction in grade, &c., formed a substantial consideration in the Award made in their favour.

With regard to the individual family budgets which had been submitted, it was contended that if it was desired to form a sound judgment on those matters which a family budget was intended to illustrate, the only proper source of information was to be found in a quotation of budgets made on a wide basis by experts.

A statement was produced to show a comparison of the weekly wage rates

and weekly earnings of adult male conciliation staff in relation to the cost of living in 1914 and 1939. This showed that the present average rate of conciliation grades was 124 per cent. above the pre-war standard average rate, and that the present average earnings were 140 per cent. over pre-war. It also demonstrated that after making adjustment for alteration in cost of living the present average standard rate represented a betterment in purchasing power of 45 per cent. and the average earnings a betterment of 54 per cent. over pre-war. The average salaries of salaried staff were 97.7 per cent. above the pre-war average, and, after allowing for changes in cost of living, represented a betterment of 28 per cent. compared with the pre-war level.

A statement was submitted to show the comparison of weekly wage rates and weekly earnings of adult male conciliation staff in relation to cost of living in 1920 and 1939. This showed that after making the appropriate adjustment in respect of cost of living, the present average rate represented a betterment of 31 per cent. and present earnings represented a betterment of 37 per cent. over the 1920 position. As regards salaried staff, the present rates of pay were the same as when the National Agreement of March, 1920, was settled, and the salaried staff therefore enjoyed a betterment of 45 per cent. as compared with the level at the time of the National Agreement.

Mr. Darbyshire submitted a statement of the net product of the railway industry showing the division of the net product between labour and capital in respect of the years 1913, and 1929 to 1937. A chart showing the labour cost compared with the net revenue for these years was also handed in. In 1913 labour received 51 per cent. of the net product, whereas capital received 49 per cent. In 1937 labour received 73 per cent. and capital 27 per cent. It was submitted that the share at present taken by labour was excessive and that there could be no justification for adding to labour costs until capital had received a fairer share.

Reference was made to Decisions Nos. 1 and 3 of the tribunal and a statement showing the loss of the share of capital in the net product of the industry for the years 1932 to 1937 compared with 1931 was submitted and explained. In conclusion Mr. Darbyshire summarised his submissions as follows:—

(i) That with a net revenue figure of £37.7 millions in 1930, the companies established their case for relief from labour costs which were represented by standard rates of pay and conditions of service not less favourable than those which existed at the present time.

(ii) That although this relief from labour costs had been withdrawn, the net revenue figures of the railway companies had at no time justified such withdrawal.

(iii) That the expectations of increasing net revenue on which the final

withdrawal of this relief was based in August, 1937, had not only not been realised, but the net revenue position of the companies at the end of the year 1938 was bound to be much worse than it was at the time the relief was granted.

(iv) That as compared with pre-war, the railway staffs had advanced in pay considerably more than staff in other industries.

(v) That as compared with pre-war and also with the time the present agreements were made, the railway staffs were considerably better off in terms of "real wages."

(vi) That therefore, on merits, there was no case for improved rates of pay and conditions of service at the present time.

(vii) That the conditions of service could not be properly regarded as unsatisfactory, and that in so far as the claims sought to cancel decisions given in favour of the companies since the National Agreements:—

(a) That the claimants had failed to show that there had been any change in circumstances since these decisions were given which would justify an alteration in the conditions then decided upon.

(b) That much as the relief was needed by the companies at the time such decisions were given, this relief was required much more at the present time.

(c) That the conditions so established in favour of the companies had not (to use the test suggested in the tribunal's Decision No. 3) proved irksome to the men to an extent which was out of proportion to any resulting economy or convenience of the companies.

(viii) That as regards hardship owing to lack of promotion and redundancy, any claim to consideration under this head was adequately met by the tribunal's award in July, 1936.

(ix) That whereas in 1913 the division of the net product of the industry between labour and capital was about equal, 51 per cent. labour, and 49 per cent. capital, in 1937 the labour cost had risen to such an extent that the division between labour and capital for that year was 73 per cent. labour, and 27 per cent. capital, a proportion of nearly 3 to 1, and that the disproportion was likely to be still more marked for the year 1938.

(x) That the share of capital in the net product of the industry had been reduced in the year 1932 and onwards by a sum of more than £5 million below what was contemplated by the National Wages Board in 1931 as a basis justifying the granting of relief to the companies.

Based on his statement to the tribunal, Mr. Darbyshire submitted:—

First—That he had established from the findings and principles laid down by the tribunal itself that the claims now put forward could not be justified.

Second—That in the course of establishing this he had also established

that on merits the claims should not succeed even though the financial situation were better than it was.

Third—That from the point of view of equitable division of the net product of the industry, not only was there no justification for the claims put forward, but, on the other hand, the shareholders were entitled to a better share in the net product of the industry before there could be any question of added benefit to the staff.

Charing Cross (District Line) Collision

Action taken by London Transport on the Inspecting Officer's recommendations

The London Passenger Transport Board has informed the Minister of Transport that it has given careful consideration to the report made by Lieut.-Colonel E. Woodhouse on the collision near Charing Cross (District Line) on May 17, 1938, a summary of which appeared in THE RAILWAY GAZETTE for October 28, 1938, page 739. As a consequence of his recommendations, and for other reasons also, it has been decided to effect a number of improvements. A tunnel lighting system will be installed on the District and Metropolitan Lines, fed from outside sources but with change-over to the board's own supply should the former fail. Electric tail lights are to be provided on the Metropolitan and District Line trains, and those already in use on the tube lines improved. An oil tail light will always be carried in addition. Experiments made with various types, including a marine design, have shown that the present oil lamp is as yet the best available. Safety glass is being fitted in all wind-screens and cross partitions where not already provided. Colonel Woodhouse found that, except in the telescoped cars, most of the injuries caused by the collision appeared to be due to broken glass.

It is announced that, apart from the recommendations in the report, the conversion of the signalling circuits from d.c. to a.c., begun prior to the accident, is to be completed as rapidly as possible, signal current being standardised at 33½ cycles, avoiding any risk of interference from outside sources.

Mindful of its responsibility for safe working, the board welcomes the suggestions made with the object of increasing the safety of its railways, already very high. Additional measures, calculated to aid in this direction, have also been under review.

The collision near Charing Cross was not only the most serious accident that has ever occurred on the London Underground railways since their inception in 1863 but was, as far as can be traced, the only collision fatal to passengers on the District Line, except one near Earls Court in 1876, in which one passenger was killed.

The Electrical Industry in 1938

Activity of 1937 not generally sustained, but some increases in orders reported by transformer manufacturers

Now that 1938 is over and stock has been taken of the work done in that year, most firms are reporting that the high level of activity reached in 1937 was not sustained. A small but quite perceptible decline in business was noted on the whole, though, in a few departments, the amount of work to be done had been as much as ever; transformer manufacturers were even reported to have accounted for an increase. It was believed by the authors of at least one report that the continued demand for armaments had been responsible both directly and indirectly for the continued need of plant and productive equipment.

Metropolitan-Vickers Electrical Co. Ltd.

In the turbo-alternator department many orders for generating plant were completed or put in hand, both for public supply authorities and for industry. The most interesting development was the receipt of a further order for equipment to operate at 1,900 lb. per sq. in. 930° F. in the Brimsdown station of the North Metropolitan Power Company. Here, as in an increasingly large number of instances, the alternator is required to generate at 33,000 volts, so obviating the need for the step-up transformer which is so often associated with large sets.

Specially interesting among the orders for traction equipment were those for the L.P.T.B. for further metadyne control train units. Seventy-three of these are to be made, proving that this development is now well past the experimental stage. Important contracts under which work was done during the year included one for the building of 42 more electric locomotives for South Africa. In connection with the electrification of the Manchester—Sheffield—Wath line of the L.N.E.R. the company received an order for the electrical equipment of 70 mixed traffic locomotives. Twenty-four motor coach control equipments were ordered in connection with suburban electrification at Sydney in Australia, and 58 brake compressor motors destined ultimately for the L.P.T.B. were ordered by the B.A. Holland Engineering Co. Ltd. An order received in 1937 for supervisory equipment for the Netherlands Railways was followed during 1938 by a further order. This was for equipment to control d.c. switchgear and provide indicators therefrom at three switching stations.

Developments in electric lighting lay mainly in the direction of commercialising the innovations of the previous year. The colour correction of mercury discharge lamps, made possible by the introduction of the fluorescent lamp, and of alternative

fittings for housing combinations of mercury discharge and incandescent lamps, was found to have popularised the mercury discharge lamp in applications to which it had not been suited hitherto. The sodium type of discharge lamp had held its own for street lighting, and consequently the company decided to put lamps of this type on the market during the year.

Developments of interest to workshop and constructional engineers included the marketing of some new electric welding appliances. These were a 650 kVA. copper butt welder for sections up to 1½ sq. in., a 120 kVA. flash butt welder for mild steel sections up to 8 sq. in., and an automatic machine for welding boiler drums up to 50 ft. long with plates up to 3 in. thick.

Additional plant for manufacturing the decorative sheet material known as Traffolyte was installed during the year, and further progress was made in the research department with the creation of special alloys for withstanding high stresses at high temperatures. Such alloys are required in the manufacture of engines and turbines utilising steam at extra high pressures and temperatures.

The British Thomson-Houston Co. Ltd.

Like other firms the B.T.H. Company was kept busy building large turbo-alternator sets for public electricity supply and factory installations. One of these, a 25,000 kW unit, was for the speed of 3,600 r.p.m., and several, including units for 50,000 kW, were wound for 33,000 volts. Many transformers, ranging from a 60,000 kVA, 132/33 kV unit downwards to very small sizes, were built or put in hand, and progress was made in the application of shields to high voltage windings to obtain improved stress distribution under impulse conditions. To an increasing extent the requirement for on-load tap changing gear was met, not by adding this to existing transformers as heretofore, but by transformer units incorporating this gear as a built-in feature.

Oil-immersed switchgear was given a more rapid opening speed by improvements effected during the year with the help of the new circuit-breaker testing stations. Instead of being 15 to 20 cycles, as it used to be, the opening time is now only 3 cycles, or 0.06 seconds. Useful developments have also taken place in the design of air-break switches. Units of this type for handling any current from 600 A down to 7.5 A will soon be available for use with a 440 V a.c. supply. Air-break switchgear is to receive its first application in power house service at

the Littlebrook power station, which is now in course of construction for the Kent Electric Power Co. Ltd.

An important switchgear order was received from the Central Argentine Railway, the equipment being needed in connection with a modernisation scheme to replace switchgear which has given satisfaction during nearly 20 years of service. Other electric traction equipment was supplied in connection with new railway electrification schemes in England. Train, substation, and switchgear equipment was provided for the L.M.S. Wirral line, and for the South Tyneside line of the L.N.E.R. Some 17-year-old B.T.H. equipment was modernised, and much new equipment, including mercury-arc rectifiers and transformers, was supplied.

The English Electric Co. Ltd.

Steam turbines and alternators were made in all sizes, but the outstanding set, which is still in course of manufacture, was a 40,000 kW one for running at 3,000 r.p.m. This is believed to be the largest for such a speed yet built for this country.

The Lochaber hydro-electric station of the British Aluminium Co. Ltd. was extended to bring the capacity up to 100,000 h.p., the addition to plant comprising five 10,200 h.p. impulse turbines each driving two d.c. dynamos in tandem at 250 to 267 r.p.m. with a combined output of 10,000 amperes at 350 volts.

Diesel engines were built or were put in hand to meet needs in all five continents. Expressed in horsepower the engines sold during the year were repeat orders to the extent of 70 per cent. One repeat order (from Bermuda) was for a 3,500 h.p. Fullagar two-stroke unit. Engines of the more conventional four-stroke type formed a proportion of the work completed and of new work ordered.

Two vessels, one for seagoing duties and the other a Thames tug, were completed with diesel-electric propulsion and put into service. The tug equipment was ordered as a sequel to the good results obtained with an earlier vessel having this form of propulsion.

Transformer and switchgear contracts kept the responsible departments steadily at work, and the use of high-speed high-rupturing capacity fuses became still further extended, more particularly for protecting industrial distribution networks. One of the most important contracts included the supply of all the low-tension protective gear needed for the reorganisation of important railway engineering workshops.

Mercury-arc rectifiers were further improved by research, and 21 steel tank units, each for 1,500 kW., were ordered by the L.P.T.B. for the Northern and Elstree extensions of the tube railways. Other railway activities concerned fresh electrifications in New Zealand, and the modernisation of the

stock of the Liverpool and Southport L.M.S. line. Also, orders for traction equipments continued to be received from the Southern Railway.

Diesel traction engine and transmission equipments for the L.M.S. Railway and other lines overseas made demands upon the company.

General Electric Co. Ltd.

As regards turbo-alternators, transformers, and switchgear, the report of this company resembles that of the others, inasmuch as a good volume of business was done to meet the most modern of needs. Special reference was made to improvements in mercury-arc rectifiers of the pumpless air-cooled type. Outputs of 500 kW. at 600 V., 1,000 kW. at 1,500 V., and

1,500 kW. at 3,000 V. were said to be easily obtainable in single cylinders thanks to this development. The L.P.T.B. ordered 88 rectifiers for a total output of 37,000 kW. for railway supply purposes, and also quantities of transformers, circuit-breakers, and other auxiliary equipment. Locomotives for battery or third rail operation were supplied to the board, and development work was done to perfect apparatus for 1,500-V. locomotives and multiple-unit trains.

In the marine field an interesting example of work done was presented by the new Clyde vehicular ferry boat, which was equipped for diesel-electric drive. The propulsion gear was arranged to work on the constant current system.

A development, to meet the needs of A.R.P. among other things, lay in the improvement of automatically operated equipment. A system of centralised control was introduced, and one possible use for this was to enable public lighting in streets to be extinguished or re-established at a moment's notice.

The fittings and auxiliaries used in connection with mercury discharge lamps of the original Osira and the fluorescent types have been improved in detail, and very many more miles of road have been provided with this form of lighting. Work was started in Hammersmith on a conversion scheme ultimately designed to embrace a total length of from 8 to 10 miles of highway.

Speed in Modern Life

The Great Western Railway (London) Lecture & Debating Society held a debate with the Bank of England Debating Society on January 12 on the motion, proposed by the Bank, "That the desire for speed in modern life is to be deplored."

Mr. F. J. Crerar proposed the motion and said that the desire for speed originated from ordinary people like himself and from, for instance, railway companies who supplied it. And the desire for speed created more speed. What were the effects of this? Thousands of people were able to live farther from their work, with the result that cities expanded enormously and the suburban dweller gained no benefit. On the roads life was more dangerous; there were a quarter of a million accidents a year. Speed in the air had also become a deadly menace in warfare. In the factories, too, the desire for speed meant that work was speeded up and workers tended to take on the mechanical qualities of the machines they tended. One had only to consider the deplorable effects which the speeding up of business operations, the rush and hurry, had on people. Were not the contemporary disorders, gastritis and neurasthenia, attributable to this? Speed took away more than it gave.

Mr. R. G. Plowman in opposing the motion argued that this desire for speed was not specifically a characteristic of modern life, but that it had always existed and as a part of human nature it was not vicious. The desire had been present among the Greeks and Romans, but only today had it become possible to realise it. Other civilisations had surpassed ours in some ways but in transport we had done better than any. Gone now were the days when it took four days by coach to keep an appointment in York. Journeys were a means to an end and today increased speed made the means more efficient. For the man in the street increased speed had made life richer. It meant the annual holiday, week-ends in the country, and the possibility of living in the

country but working in the town. In international politics it meant that disputants could more easily meet face to face and literally see the other side. It enabled us to travel abroad, and acquire tolerance by seeing other peoples and their ways of living. Nor had this increased speed been at the expense of comfort and safety, but the latter had increased with it. It had been alleged that increased speed had a detrimental effect on health, but the improvement in vital statistics was sufficient reply to that. Greater speed in the operations of industrial production and commerce had meant that there were many more articles available for consumption. We enjoyed today much greater leisure and opportunities of knowledge and experience. If life was faster than yesterday, it was also much fuller.

Mr. A. L. Rederove urged in support of the motion that the ways in which the modern desire for speed manifested itself were deplorable. This desire found expression in impatience in politics and the antagonism between left and right. It had affected science and sport, and in culture had developed the tendency towards tabloid learning. Nor was there much to be said in favour of those people to whom speed was an end in itself instead of a means. In the mechanics of our civilisation, for instance the aeroplane, speed had increased so much that it had outstripped the development of moral control. That was the great disadvantage.

Mr. D. Lavton, who supported the opposer, argued that the matter at issue was not the evil consequences of speed as urged by the proposers, but the actual desire for it, which he contended existed among only a very small proportion of the population. The effects of speed in modern life which had been deplored had really been a condemnation of inadequacy of social control. Speed in industrial life might tend to create nervous disorder but it was only because there was not sufficient social control to adjust it to human capacity and abolish individual friction. Speed considered by itself was a great potential means of shortening dull hours

and increasing rich ones, and organising a better life for millions. That it did this very imperfectly was a social criticism, and could not be accepted as evidence that the desire itself for speed was to be deplored.

On a vote the motion was defeated.

Railway and Other Reports

Metropolitan Railway Surplus Lands Co. Ltd.—The directors recommend a dividend of 2½ per cent. for the half-year ended December 31 last, making 3½ per cent. for the year 1938 (the same as for 1937). The balance carried forward is £1,255, against £2,519 brought in.

International Railways of Central America.—The directors have declared a dividend of \$1.25 a share on the 5 per cent. cumulative preferred stock, payable on February 15 to holders of record on January 26. This brings the payments up to November 15, 1933. No dividend has yet been paid on the common stock.

Mersey Railway Company.—At a meeting of the board, held on January 27, it was resolved: (1) To pay the full dividend of 3 per cent. on the perpetual preference stock, less income tax at 5s. 6d. in the £ for the year ended December 1, 1938; (2) To recommend payment of a dividend on the consolidated ordinary stock of £1 5s. 0d. per cent., less income tax at 5s. 6d. in the £ for the year ended December 31, 1938. The dividend on the ordinary stock for 1937 was 17s. 6d. per cent.

Forthcoming Meetings

- Feb. 8 (Wed)—Weymouth & Portland Railway Company (Ordinary Half-Yearly General), Regis House, King William Street, E.C.4, at 3.30 p.m.
- Feb. 10 (Fri)—Fishguard & Rosslare Railways & Harbours Company (Half-Yearly Ordinary), Paddington Station, W.2, at 1 p.m.
- Feb. 14 (Tues)—Oldham, Ashton-under-Lyne & Guide Bridge Junction Railway Company (Ordinary Annual), Marylebone Station, L.N.E.R., at 11 a.m.

NOTES AND NEWS

Novel Wagon Unloader, L.N.E.R.—The L.N.E.R., after successful experiments in the Sheffield district with a mechanical wagon unloader, has decided to make use of the machine as part of its permanent equipment. It consists of a mechanical excavator fitted with a patent push plate, and is used for unloading wagons of refuse.

A "Square Deal" Broadcast.—The British Broadcasting Corporation announces that, on February 6, in the Regional programme, at 6.40 p.m., Mr. G. J. Ponsonby will talk on "A 'Square Deal' for All? : A description of the present state of the transport problem." This programme will be repeated in the National programme at 10.45 a.m., on Thursday, February 9.

The Engineers' Guild.—A meeting of the Engineers' Guild is to be held at Caxton Hall, Westminster, S.W.1, on Monday, February 20, punctually at 6.30 p.m. It is intended, after some formal business, to invite discussion upon the proposed policy and activities of the guild. Members and associate members of the Institutions of Civil Engineers, Mechanical Engineers, Naval Architects, and Electrical Engineers, are invited to attend, whether members of the guild or not.

Barcelona Underground Resumes Working.—One of the first cares of the Nationalist authorities, after the entry of the military columns into Barcelona, was to reorganise the electricity supply, which had been partly cut off since the capture of the big power station at Tremp, and only partly maintained by the two power stations in the city. Trains started running again on the underground railways on January 28, and blankets and mattresses are disappearing from the station platforms. Trams also are running and transport in the city is rapidly recovering normal conditions.

Railway, &c., Bills in Parliament.—The Railway Clerks Association has deposited a petition against the London & North Eastern Railway (Superannuation Fund) Bill. Against the Southern Railway Bill there are four petitions, mainly relating to works in connection with the Waterloo & City Railway. The London Passenger Transport Board Bill has seven petitions against it, including one from the Thames Valley Traction Co. Ltd., and others; one from the Grand Union Canal Company and others; one from the Commercial Motor Users' Association and Road Passenger Transport Operators in London and the Home Counties; and one from the Kent County Council.

Railway Signal Patent Action.—Mr. Justice Morton gave judgment on Wednesday dismissing the action brought by the General Railway Signal Co. Ltd. against the Westinghouse Brake & Signal Co. Ltd. The plaintiff company claimed damages for alleged

infringement of its patent and an injunction to restrain further infringement. The hearing had lasted 38 full days. Mr. Justice Morton held that the claims in the plaintiff company's specification were so ambiguous and obscure that they did not sufficiently and clearly define the nature and scope of the monopoly claimed, and that no infringement had been established. Costs were awarded to the defendant company on the higher scale.

Roumanian Train Collision.—It is reported by Reuters, from Bucharest, that four persons were killed and six injured when a goods train ran into a petroleum train in the station at Ploesti early on the morning of Saturday last, January 28.

East Anglian Floods Interrupt Rail Services.—The recent severe flooding in the Eastern Counties caused some disorganisation of L.N.E.R. train services. On January 26, it became necessary, owing to breaches in the line between Ipswich and Norwich, to divert London-Norwich traffic via Cambridge. Flooding in the Woodbridge area held up trains on the Yarmouth line, and the train service between Beccles and Bungay in the Waveney Valley had to be suspended. The next day a landslip blocked the Colchester-Manningtree section at Ardleigh; night trains worked over a single track. The line was later cleared. By Monday last, however, the floods had subsided sufficiently to allow the running of normal services over all East Anglia.

Goodwill Whistle for the Coronation Scot Train.—As a gesture of goodwill from American model railway enthusiasts, *The Model Railroader* has arranged for the presentation of an appropriately-engraved standard American locomotive whistle to the locomotive of the Coronation Scot train during the course of its visit to the United States. The presentation will probably take place in the Grand Central station, Chicago, which the train is scheduled to visit on April 2. The cost of the whistle and engraving, which will be some \$75, will be defrayed by contributions from readers of our American contemporary *The Model Railroader*. Mr. Eric LaNal who is responsible for the idea, opened the fund with his own contribution of \$1.

Istanbul Local Transport.—The acquisition by the Government of important industrial and public utility undertakings in Turkey has been proceeding for the past few years, and from time to time we have recorded the taking over of various company-worked railways. It is now reported from Ankara that agreement has been reached between the Turkish Government and the Société Financière de Transporte et d'Enterprises Industrielles for the acquisition of the local transport undertakings in Istanbul controlled by this Belgian group, which is commonly called Sofina. The purchase terms

are stated to comprise £250,000 sterling for the Istanbul Tramways Company and £29,000 for Istanbul Underground Railway; the latter undertaking formed the subject of an editorial note on page 3 of our issue of January 1, 1937.

The Rügendamm Bridges, Germany.—With reference to our description (in *THE RAILWAY GAZETTE* of January 20, page 99) of the Ziegelgraben and Strelasund all-welded railway bridges connecting the German mainland with the island of Rügen, we are informed that the bascules, hinges, and pull-rod bearings of the Ziegelgraben bridge are fitted with Fischer self-aligning roller bearings.

Southern Railway Assessment.—The Railway Assessment Authority notifies that on January 27 it completed that part of the second railway valuation roll which relates to the Southern Railway. The total average net receipts of the company for the years 1930-34, as contained in the draft roll (£4,617,832) have not been altered. The cumulo as appearing in the draft roll (£1,150,000) also remains unaltered. Of the cumulo of £1,150,000 there has been allocated to the principal undertaking the sum of £1,085,930, to the docks £61,320 in the aggregate, and to the canals £100; there has also been allocated £2,650 in the aggregate to three subsidiary undertakings (namely, the Shoreham, Hayling Island, and Lymington toll bridges) which were not included in the draft roll. Of the £1,085,930 there has been allocated to Class A as a whole £912,170, and to Class B as a whole £173,760.

Institution of Railway Signal Engineers: Prizes for Papers.—The Council of the Institution of Railway Signal Engineers has made the following awards in connection with papers read during the 1938 session: 1st prize, value £5, to Mr. E. W. Challis, for his paper on "A Comparison between Relay and Electric Interlocking," read in London on December 21, 1938; a 2nd prize, value £2 10s., to Mr. R. P. Quelch, for his paper read at Birmingham on April 27, 1938, entitled "Principles of Selectivity as Applied to Railway Telephony and Telegraphy," and another 2nd prize, of the same value, to Mr. J. E. Mott, for his paper on "Train Describers," read in London on November 16, 1938. The prizes will be distributed at the annual general meeting, to be held at the Institution of Electrical Engineers, London, on February 22.

Railways of the Isle of Wight.—The railways of the Isle of Wight, although modest in mileage, are rich in historical, operating, and scenic interest. The story of their activities, both during their somewhat happy-go-lucky past when they were under independent ownership and at the present time under the control of the Southern Railway, was graphically told by Mr. A. B. MacLeod (Assistant Stores Superintendent, Southern Railway) in a lecture to the Model Railway Club in London, on January 26. Some of the many points dealt with by Mr. MacLeod

were: early communications with the mainland; the development of the principal railways (Isle of Wight, Isle of Wight Central, and Newport, Yarmouth & Freshwater); their traffic and operation, locomotives and rolling stock; extensions proposed but never built; steamship services; and finally the extensive programme of rolling stock modernisation and works which the Southern Railway has carried out since it acquired these lines. The lecture was well illustrated with the aid of an episcopo, and was concluded by an entertaining film showing how the railways of the island deal with their large and constantly increasing traffic.

Paddington Station "Black Out."

—Air raid precautions at Paddington station were tested between 1.0 a.m. and 4.0 a.m. on Sunday morning last, January 29. A "black out" was staged covering the passenger and goods stations, the three miles of running and carriage lines as far as Old Oak Common, and the locomotive depot and the passenger marshalling yard at that point. Lighting through-

out the area was drastically reduced; searchlight signals were fitted with extra long shields to prevent the rays being seen from above, and the battery of floodlights at Old Oak Common was replaced by restricted lighting in the yard, offices, and locomotive sheds. All trains passing through the area had blinds drawn and locomotives carried special covering over the engine cabs to prevent the light from the fireboxes being seen. During the test, work proceeded normally, and there were no delays to trains. At Paddington the company's A.R.P. scheme was tried out, and fire, decontamination, first aid, and rescue squads operated under realistic conditions. Volunteers from the company's staff acted as casualties, and dummies were used in the staged fire exercises in connection with which the Paddington Auxiliary Fire Brigade was called out. During the "black out," aerial observation was kept and a special train run between Paddington and Old Oak Common to test restricted train lighting arrangements. The test was carried out in full accordance with schedule.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 4th Week			Totals to Date		
	1939	1938	Inc. or Dec.	1939	1938	Inc. or Dec.
L.M.S.R. (6,831½ mls.)						
Passenger-train traffic...	367,000	375,000	— 8,000	1,478,000	1,523,000	— 45,000
Merchandise, &c. ...	400,000	465,000	— 65,000	1,564,000	1,879,000	— 315,000
Coal and coke ...	304,000	309,000	— 5,000	1,222,000	1,258,000	— 36,000
Goods-train traffic ...	704,000	774,000	— 70,000	2,786,000	3,137,000	— 351,000
Total receipts ...	1,071,000	1,149,000	— 78,000	4,264,000	4,660,000	— 396,000
L.N.E.R. (6,315 mls.)						
Passenger-train traffic...	242,000	253,000	— 11,000	992,000	1,029,000	— 37,000
Merchandise, &c. ...	282,000	339,000	— 57,000	1,067,000	1,305,000	— 238,000
Coal and coke ...	269,000	281,000	— 12,000	1,042,000	1,125,000	— 83,000
Goods-train traffic ...	551,000	620,000	— 69,000	2,109,000	2,430,000	— 321,000
Total receipts ...	793,000	873,000	— 80,000	3,101,000	3,459,000	— 358,000
G.W.R. (3,737½ mls.)						
Passenger-train traffic...	152,000	155,000	— 3,000	652,000	651,000	+ 1,000
Merchandise, &c. ...	168,000	194,000	— 26,000	680,000	777,000	— 97,000
Coal and coke ...	109,000	132,000	— 23,000	463,000	528,000	— 65,000
Goods-train traffic ...	277,000	326,000	— 49,000	1,143,000	1,305,000	— 162,000
Total receipts ...	429,000	481,000	— 52,000	1,795,000	1,956,000	— 161,000
S.R. (2,140 mls.)						
Passenger-train traffic...	253,000	255,000	— 2,000	1,035,000	1,045,000	— 10,000
Merchandise, &c. ...	53,000	63,000	— 10,000	207,500	233,000	— 25,500
Coal and coke ...	39,000	42,000	— 3,000	147,500	154,000	— 6,500
Goods-train traffic ...	92,000	105,000	— 13,000	355,000	387,000	— 32,000
Total receipts ...	345,000	360,000	— 15,000	1,390,000	1,432,000	— 42,000
Liverpool Overhead ...	1,339	1,335	+ 4	5,635	5,588	+ 47
Mersey (4½ mls.) ...	4,438	4,320	+ 118	18,492	18,254	+ 238
*London Passenger Transport Board ...	553,300	559,400	— 6,100	17,602,400	17,419,100	+ 183,300
IRELAND.						
Belfast & C.D. pass. (80 mls.)	1,775	1,748	+ 27	6,854	6,783	+ 71
" " goods	440	496	— 56	1,483	1,581	— 98
" " total	2,215	2,244	— 29	8,337	8,364	— 27
Great Northern pass. (543 mls.)	7,350	7,500	— 150	32,100	32,200	— 100
" " goods	9,500	8,400	+ 1,100	34,100	31,750	+ 2,350
" " total	16,850	15,900	+ 950	66,200	63,950	+ 2,250
Great Southern pass. (2,076 mls.)	24,563	25,877	— 1,314	109,937	110,924	— 987
" " goods	38,036	38,298	— 262	160,508	175,778	— 15,270
" " total	62,599	64,175	— 1,576	270,445	286,702	— 16,257

* 31st Week (before pooling)

British and Irish Railway Stocks and Shares

Stocks	Highest 1938	Lowest 1938	Prices	
			Feb. 1, 1939	Rise/Fall
G.W.R.				
Cons. Ord. ...	65½	25½	26	+3
5% Con. Prefce. ...	118½	74	74½	—
5% Red. Pref. (1950) ...	111½	90	85½	—5
4% Deb. ...	111	97½	97½	+1
4½% Deb. ...	112½	100½	99	—1½
4½% Deb. ...	118½	104	106	—
5% Deb. ...	131½	119	115½	—2
2½% Deb. ...	69¾	60	63½	—
5% Rt. Charge ...	129	114	111½	—1
5% Cons. Guar. ...	128½	103	105½	—1
L.M.S.R.				
Ord. ...	30½	11	11½	+¾
4% Prefce. (1923) ...	70½	23	24½	+3
4% Prefce. ...	82½	43½	43½	+4
5% Red. Pref. (1955) ...	103½	66	62½	—
4% Deb. ...	105½	85	91½	+1
5% Red. Deb. (1952) ...	114½	105	106	—
4% Guar. ...	102¾	77½	77½	+1
L.N.E.R.				
5% Pref. Ord. ...	89½	3½	4	+½
Def. Ord. ...	47½	21½	2½	+½
4% First Prefce. ...	68½	21	22½	+2
4% Second Prefce. ...	27½	8	—	—
5% Red. Pref. (1955) ...	97	40½	42½	+2
4% First Guar. ...	97½	66½	64½	—
4% Second Guar. ...	91½	52	51½	—
3% Deb. ...	79½	60	64½	+2
4% Deb. ...	104½	77	85½	—½
5% Red. Deb. (1947) ...	110½	97	105½	+1
4½% Sinking Fund Red. Deb. ...	108½	101	102	—1
SOUTHERN				
Pref. Ord. ...	87	47½	53½	+2½
Def. Ord. ...	21½	9½	11	+½
5% Pref. ...	115	83	84½	+1
5% Red. Pref. (1964) ...	115½	98	96½	—
5% Guar. Prefce. ...	128½	106	106½	—1
5% Red. Guar. Pref. (1957) ...	116	109½	106½	—2
4% Deb. ...	109½	95	96½	+2
5% Deb. ...	129	117	112½	—5
4% Red. Deb. 1962-67 ...	107	101½	99	—1
BELFAST & C.D.				
Ord. ...	4	3½	4	—
FORTH BRIDGE				
4% Deb. ...	102	99½	96½	—
4% Guar. ...	103½	94½	95	—
G. NORTHERN (IRELAND)				
Ord. ...	5½	2½	3½	—
G. SOUTHERN (IRELAND)				
Ord. ...	25½	8½	15	—
Prefce. ...	35	13	13	—
Guar. ...	70½	30½	27	—3
Deb. ...	83	56	55½	+½
L.P.T.B.				
4½% "A" ...	119½	107½	107½	—1
5% "A" ...	130	117	115½	+1
4½% "T.F.A." ...	108	98	102½	—
5% "B" ...	122½	105	109½	—3
"C" ...	84	68	68½	—2½
MERSEY				
Ord. ...	24½	16½	22	+½
4% Perp. Deb. ...	102½	94½	94½	—
3% Perp. Deb. ...	77	69	66½	—
3% Perp. Prefce. ...	66½	57	55	—

* ex dividend

CONTRACTS AND TENDERS

D. Wickham & Co. Ltd. has received an order from the Argentine State Railway Administration for 10 No. 8B motor-driven inspection trolleys.

Diesel Railcars for Rhodesia

The Metropolitan-Cammell Carriage & Wagon Co. Ltd. has received an order from the Rhodesia Railways for two articulated and two single diesel railcars and one spare power bogie, all to be equipped with Ganz type 240-b.h.p. engines and mechanical transmission, and to be supplied to the inspection of Messrs. Freeman Fox and Partners. In the case of the articulated units, each of the cars will be fitted with one engine. Accommodation will be provided for both European and native passengers, and a quantity of light freight. The order follows the successful operation of the single railcar, which, as recorded in our issue of October 30, 1936, was at that time commencing service on this railway.

The Baldwin Locomotive Works has received from the Texas-Mexican Railway an order for seven diesel locomotives to a value of \$450,000.

W. G. Bagnall Limited has received an order from the Gaekwar's Baroda State Railways Administration to the inspection of Messrs. Rendel, Palmer & Tritton, for the supply of one superheated boiler for "A" class locomotive.

The South Indian Railway Administration has recently placed the following orders to the inspection of Messrs. Robert White & Partners:—

Alfred Herbert Limited: One 10½-in. by 12-ft. lathe.

Rhodes & Cartwright Limited: 700 galvanized steel buckets.

Banting & Tresilian Limited: 48 flanged and flat copper plates.

The Yorkshire Engine Co. Ltd. has received an order from the Rohilkund & Kumaon Railway Administration, to the inspection of Messrs. Rendel, Palmer & Tritton, for the supply of five superheated boilers required for B.E.S.A. 4-6-0 locomotives.

British Insulated Cables Limited has received an order from the Chinese Government Purchasing Commission on behalf of the Chinese Ministry of Communications for 100 metric tons of smoked hard-drawn copper wire to be supplied to the inspection of Messrs. Fox & Mayo.

The Southern Pacific Railroad is enquiring for 40 steam locomotives, and the Union Pacific Railroad for 15, states Reuters.

Leyland Motors Limited has received orders from the Western Welsh Omnibus Co. Ltd. for the supply of 20 oil-engined single-deck passenger vehicles, and from the Ramleh Electric Railway, Egypt, for the supply of three oil-engined single-deck passenger vehicles.

The Pennsylvania Railroad has placed orders with the Edward G. Budd Manufacturing Company for five dining cars and 12 coaches to be built in stainless steel; with the American Car & Foundry

Company for five steel-bodied dining cars; and with the Pullman-Standard Car Manufacturing Company for five aluminium alloy-bodied dining cars. All this stock is to be fully streamlined and is for use on blue ribbon east-west through services.

Beruck & Comens (Engineers) Limited has received orders from the Indian Stores Department for 28 sets of switches.

Tyres and Axles Required for S. Africa

The South African Railways & Harbours Administration is calling for tenders (Tender No. 2049) for the supply and delivery of quantities of steel tyres, axles, and wheel centres. Tenders endorsed "Tender No. 2049—Steel tyres, axles, and wheel centres," should reach the Chief Stores Superintendent, Purchase Section, South African Railways & Harbour headquarter offices, Johannesburg, by February 21. A copy of the schedule and general conditions of tender, but not the drawings mentioned in the schedule, may be borrowed from the Department of Overseas Trade, London, S.W.1.

Locomotives Required for India

The Controller of Stores, East Indian Railway, is calling for tenders (Tender No. S/SP/933/A) for the supply and delivery of 15 Indian Railway standard 2-8-2 (goods) "XE" type locomotives with 6,000-gall. bogie tenders. Tenders endorsed "Tender No. S/SP/933/A for the supply of "XE" class locomotives and tenders" should be addressed to the General Manager, East Indian Railway, Calcutta, to be received by March 1. A copy of the specification and general conditions of tender, together with drawings, may be borrowed from the Department of Overseas Trade, London, S.W.1.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department (Engineering Section), New Delhi, receivable by February 13, for the supply of a quantity of india-rubber springs required for the North Western and Eastern Bengal Railways.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department (Electrical Section), New Delhi, receivable by February 14, for the supply of one switchboard, one five-ton hand-operated overhead traveling and traversing crane complete with gantry rails, chains, and blocks, and one motor-driven air compressor required for the North Western Railway power house at Mari Indus.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department (Electrical Section), receivable by February 28, for the supply of four or two with luffing jib, or alternatively two with fixed jib, 2-ton steam coaling cranes required for the East Indian Railway.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department (Electrical Section), receivable by February 21, for the supply of 200 carriage ceiling fans and 200 regulators required for the North Western Railway.

Forthcoming Events

- Feb. 4 (Sat.).—Permanent Way Institution (Manchester-Liverpool), at L.M.S.R. Offices, Hunts Bank, Manchester, 3 p.m. "Track Defects: Their Prevention and Cure," by Mr. J. Whitely.
- Permanent Way Institution (Southampton), at Terminus Station, 2.45 p.m. "Permanent Way Institution Convention in Germany, 1938," by Mr. W. A. Willox.
- Feb. 6 (Mon.).—B.B.C. Regional Programme, at 6.40 p.m. "A Square Deal for All? a Description of the Present State of the Transport Problem," by Mr. G. Ponsonby.
- G.W.R. (Birmingham) Lecture and Debating Society, at Great Western Hotel, Snow Hill Station, 6.30 p.m. "The Jubilee of a Railway Journal," by Mr. R. Thurtle.
- Society of Engineers, at Geological Society, Burlington House, Piccadilly, London, W.1, 6 p.m. Presidential Address, by Sir Henry Maybury, G.B.E.
- Feb. 7 (Tues.).—Institute of Transport (Metropolitan Graduate), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 6 p.m. "Position of Light and Secondary Railways," by Mr. Charles Klapper.
- Institution of Civil Engineers, Great George Street, London, S.W.1, 6 p.m. "Some Experiments on the Lateral Oscillation of Railway Vehicles," by Mr. R. Davies.
- "The Vertical Path of a Wheel Moving along a Railway Track," by Prof. C. Inglis.
- Permanent Way Institution (Brighton), at Railway Inst., New England Street, 7 p.m. "Permanent Way Institution Convention in Germany, 1938," by Mr. W. A. Willox.
- Permanent Way Institution (York), at Railway Inst., Queen Street, 6.30 p.m. "Bolted Track," by Mr. M. Maycock.
- Feb. 8 (Wed.).—Diesel Engine Users Association, at Caxton Hall, Caxton Street, London, S.W.1, 4.45 p.m. "The Design and Construction of Alternators for Coupling to Diesel Engines," by Messrs. W. Holland and F. Fitchett.
- Institution of Civil Engineers, Great George Street, London, S.W.1, 6 p.m. Road Engineering Section Inaugural Meeting.
- Institution of Heating and Ventilating Engineers (London), at Park Lane Hotel, W.1, 6.30 for 7 p.m. Annual Dinner.
- Permanent Way Institution (London), at Underground Railways Dining Club, Pelham Street, S.W.7, 7 p.m. "Concrete in Railway Construction," by Mr. R. Blyth.
- Feb. 9 (Thurs.).—B.B.C. National Programme, at 10.45 a.m. "A Square Deal for All? a Description of the Present State of the Transport Problem," by Mr. G. Ponsonby.
- G.W.R. (London) Lecture and Debating Society, in General Meeting Room, Paddington Station, 5.45 p.m. Reading and Discussion of Prize Essay: "The Criteria of an Efficient Railway Service."
- Institute of Transport (Manchester-Liverpool Graduate), at Grosvenor Hotel, Manchester, 7 p.m. "The Arrangement of Bus Services," by Mr. J. Gillanders.
- Institution of Electrical Engineers, at Grosvenor House, Park Lane, London, W.1, 7 for 7.30 p.m. Annual Dinner.
- Southern Railway (London) Lecture and Debating Society, at Chapter House, St. Thomas' Street, S.E.1, 5.45 p.m. "South Africa and the Southern," by Mr. R. M. T. Richards.
- Feb. 10 (Fri.).—Institute of Transport (Newcastle), at Royal Station Hotel, 7.30 p.m. Visit of the President. "Transport, its Evolution and the Effect of Legislation on its Development," by Mr. O. Corble.
- Permanent Way Institution (Hull), at Lecture Hall, Paragon Station, 7 p.m. "Permanent Way Institution Convention in Germany, 1938," by Mr. W. A. Willox.

Crown Agents for the Colonies

COLONIAL GOVERNMENT APPOINTMENTS

APPLICATIONS from qualified candidates are invited for the following posts:—

M/8299 ASSISTANT ENGINEER

required by the Gold Coast Government Railway for two tours of 12-24 months with possible permanency. Salary £475 a year for two years then £500-£25-£600-£30-£840 a year and then subject to promotion to a vacancy by annual increments of £40 to £1,000 a year. Free passages and quarters and liberal leave on full salary. Candidates, aged 25-35, must be Corporate Members of the Institution of Civil Engineers or possess an engineering degree recognised as granting exemption from Sections A and B of the A.M.I.C.E. examination, and must have had practical experience on a British Railway. Preference will be given to candidates who have had, in addition to the above qualifications, practical experience in harbour maintenance.

M/6607 SECTION ENGINEER

required for the Nigerian Government Railway for two tours each of 12-24 months, with prospect of permanency. Salary £475-£840 a year. Free passages and quarters and liberal leave on full salary. Candidates, aged 25-35, should be Corporate Members of the Institution of Civil Engineers or possess an Engineering degree recognised as granting exemption from Sections A and B of the A.M.I.C.E. examination, and have had practical experience in bridge and reinforced concrete construction. Candidates who are students of the Institution of Civil Engineers and have had the requisite

practical experience, are also eligible for consideration.

Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience and mentioning this paper to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting the reference number against the appointment for which application is made.

Indian State Railways

APPLICATIONS are invited from British subjects of non-Asiatic domicile for two appointments in the Mechanical Engineering and Transportation (Power) Department of Indian State Railways.

Candidates must have been not more than 30 years of age on the 1st October, 1938, and must have passed the qualifying examination for A.M.I.C.E., or A.M.I.Mech.E., or have obtained an engineering degree or diploma giving exemption from such examination. They must have served at least four years as pupils or apprentices in locomotive workshops of a British railway, or in workshops of locomotive builders of repute, and should have had some training in running sheds and in firing and should have a thorough understanding of the applied mechanics and the nature and composition of all materials used in shops and be able to design and to calculate stresses on parts of machines.

Further particulars and forms of application may be obtained, on request by postcard, from the High Commissioner for India, General Department, India House, Aldwych, London, W.C.2. Last date for receipt of completed applications 24th February, 1939.

Royal State Railways of Siam

NOTICE.

SEALED TENDERS for the supply of Diesel Electric Locomotives will be received by the Superintendent of Stores, Royal State Railways of Siam, Bangkok, Siam, up to 14.00 o'clock on the 1st June, 1939, at which hour and date they will be privately opened in the Superintendent of Stores' Office.

Blank Tender Forms are obtainable from Messrs. Sandberg, 40, Grosvenor Gardens, London, S.W.1, and 25, Broadway, New York City, at the price of £5 0s. 0d. and U.S. \$22.00 respectively.

THE ADMINISTRATION,
ROYAL STATE RAILWAYS OF SIAM.

THE Proprietors of Patent No. 440,987, for "Double-Seat Valve for High Pressure and High Temperature in particular for Controlling Steam Locomotives," are desirous of entering into arrangements by way of licence and otherwise, on reasonable terms, for the purpose of exploiting the same and ensuring its full development and practical working in this country. Address all communications in first instance to: HASLET & Co., 28, Southampton Buildings, Chancery Lane, London, W.C.2.

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Thursday. All advertisements should be addressed to:—The Railway Gazette, 35, Tothill Street, Westminster, London, S.W.1.

Hatfield Collision, L.N.E.R.

At about 10 a.m. on the morning of Thursday, January 26, during the semi-arctic weather then prevailing, the 7.35 p.m. sleeping-car train from Aberdeen to King's Cross was standing at Hatfield No. 2 box home signal on the main line north of Hatfield, L.N.E.R. The 7.34 a.m. train from Cambridge to King's Cross was brought to a stand immediately behind this train under time interval working, owing to the block apparatus having been put out of order by the severe weather. The 8.25 a.m. from Cambridge to King's Cross in turn was brought behind the latter train under similar working arrangements. The 7.15 a.m. train from Peterborough to King's Cross, which had been cautioned at Welwyn Garden City, the previous block post, should have drawn up behind the 8.25 a.m., but ran into it, completely demolishing the rear unit of the last coach of the 8.25 a.m., an articulated vehicle, the front unit of which telescoped the rear unit of the next vehicle, also articulated, which itself partly telescoped its front unit. A passenger in one of these vehicles was killed and four other passengers were admitted to hospital. In addition 23 others subsequently complained of injuries or shock. The lines were cleared by about midnight.

The Great Northern Section lines of the L.N.E.R. were among the worst sufferers from the extreme climatic conditions of last week, which, as Lieut.-Colonel E. Woodhouse, the Ministry of Transport Inspecting Officer, said in opening the inquiry at King's Cross station on January 31, hampered the

railways running out of London to the North to a very great degree. As block telegraph lines and all telephone wires were down almost completely between Newark and King's Cross, traffic working on this section became very difficult and serious delays to passenger and freight services occurred, as well as restrictions in the suburban services. Block telegraph wires were not completely restored until Monday morning, January 30, and there was a complete lack of telephone communication both with King's Cross district control and with the central control which co-ordinates the work of all districts. Even so recently as Wednesday, all the control wires were still out of action and telephonic communications could be effected only over Post Office lines.

On the day of the collision every suburban service, apart from trains running through to Moorgate via the Metropolitan Widened Lines, started from or terminated at Finsbury Park. Main line trains were diverted via Hertford, and the Flying Scotsman and the 10.10 a.m. expresses, which had proceeded under the time interval arrangement as far as Hatfield, had to be brought back to Wood Green and sent forward via the Hertford loop to rejoin the main line at Stevenage.

Mr. V. M. Barrington-Ward, Superintendent (Western Section), L.N.E.R., in a statement at the Ministry of Transport inquiry last Tuesday, gave the cause of the accident as the snow-storm, and referred to the complete failure of telephone arrangements be-

tween Newark and King's Cross, which had necessitated the introduction of time interval working.

Sir Nigel Gresley, Chief Mechanical Engineer, L.N.E.R., said the colliding train travelled 162 ft. after the crash, and he estimated its speed at about 40 m.p.h. The engine of this train was No. 4813 of the "Green Arrow" 2-6-2 type and could accelerate very quickly. He considered that the damage to the underframe of the last vehicle of the 8.25 a.m. Cambridge train was quite as bad as that inflicted on the last carriage in the Castlecary accident of December, 1937.

After evidence had been given by signalmen, the guard of a goods train which was drawn up on the adjacent up goods line, and the driver of the 7.34 a.m. up Cambridge train, the fireman of the 8.25 a.m. Cambridge train stated that when his train stopped he ran back to the rear and found the guard getting down from his van with fog signals and a red lamp. He then heard the 7.15 a.m. Peterborough train approaching, and with the guard, ran north, waving it to stop. The guard placed a detonator on the line immediately in front of this train and was commended by Colonel Woodhouse for his promptitude "at great personal risk" in laying a detonator "almost under the wheels of the approaching train."

The public session of the inquiry was closed and Colonel Woodhouse announced that he would take the evidence of the fireman and guard of the Peterborough train in private. He would also take in private audience the evidence of the driver who was still in hospital.

Railway Share Market

As a result of the more reassuring views which have developed in regard to international political affairs the trend in the stock and share markets has been reversed, and in many sections of the Stock Exchange the heavy decline in prices in evidence a week ago has been regained. Home railway securities benefited from the better conditions ruling on the Stock Exchange, but the tendency was to adopt a cautious attitude pending the forthcoming dividend announcements and annual reports. When the latter come to hand it will be possible to assess the outlook much more clearly and the statements at the meetings will naturally be awaited with considerable interest, particularly as reports are current that an agreement has been reached in principle on the "square deal" proposals.

The rather more hopeful views which remain current in regard to the impending dividend decisions assisted sentiment in regard to Great Western ordinary, which improved to 25½, while Southern preferred and L.M.S.R. 4 per cent. first preference,

which were also aided by rather more encouraging views as to the forthcoming dividends, were 54 and 44 respectively. Better prices ruled for Southern deferred and L.M.S.R. 1923 preference. L.N.E.R. first and second preference were a firmer market this week. Debenture stocks were assisted by the trend in Government securities and most of the guaranteed and senior preference stocks showed movements in favour of holders. Great Western 4 per cent. debentures were 97, the 5 per cent. guaranteed 105½ and the 5 per cent. preference 75. Southern 5 per cent. preference was 85 and the 4 per cent. debentures 96½. L.N.E.R. first and second guaranteed were 64½ and 52 respectively, while the 3 per cent. debentures were 64½ and the 4 per cent. debentures 84½. London Transport "C" also responded to the improved market tendency and changed hands around 70½. L.M.S.R. 4 per cent. guaranteed was 77½ and the 4 per cent. debentures 91½. The new Southern 4 per cent. debentures, which are at present £30 paid were

quoted at fractionally under this figure. They will become £65 paid on Monday, when the next call is due, and will be fully paid on February 27.

Argentine railway securities were not very active but most of the more widely-held stocks responded readily to the better trend on the Stock Exchange. B.A. Great Southern 5 per cent. preference was 37, and the 6 per cent. preference 27, while Central Argentine 4½ per cent. preference was 26½ and the 6 per cent. preference 28½, and the ordinary stocks were also better on balance. Cordoba Central 4½ per cent. debentures were active around 57½. B.A. & Pacific and B.A. Western issues showed movements in favour of holders. Antofagasta was slightly higher, but San Paulo remained out of favour. Canadian Pacific were firmer at around 5½, awaiting the forthcoming decision in regard to the dividend on the preference stock. American railway shares moved ahead, but later reacted in sympathy with the trend of Wall Street, where caution prevailed and some profit-taking occurred.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

Railways	Miles open 1938-39	Week Ending	Traffic for Week		No. of Weeks	Aggregate Traffic to Date			Shares or Stock	Prices							
			Total this year	Inc. or Dec. compared with 1938		Totals		Increase or Decrease		Highest 1938	Lowest 1938	Feb. 1, 1939	Yield % (See Note)				
						This Year	Last Year										
South & Central America	Antofagasta (Chili) & Bolivia	834	29.1.39	£ 14,390	-	£ 1,300	4	£ 49,150	£ 71,030	-	£ 21,880	Ord. Stk.	14	71½	7	Nil	
	Argentine North Eastern	753	28.1.39	7,816	+	496	31	305,694	293,265	+	12,429	A. Deb.	61½	2	5½	Nil	
	Argentine Transandine	—	—	—	—	—	—	—	—	—	—	82	75	72½	5½	Nil	
	Bolivar	174	Dec., 1938	2,050	-	1,850	52	42,150	59,550	-	17,400	6 p.c. Deb.	8	7	8½	Nil	
	Brazil	—	—	—	—	—	—	—	—	—	—	10	4	5	91½	Nil	
	Buenos Ayres & Pacific	2,803	28.1.39	110,112	+	7,693	31	2,400,997	2,518,427	-	117,430	Ord. Stk.	61½	31½	4	Nil	
	Buenos Ayres Central	190	14.1.39	\$89,000	-	\$17,300	29	\$3,270,000	\$3,632,400	-	\$414,700	Mt. Deb.	15½	8	14	Nil	
	Buenos Ayres Gt. Southern	5,082	28.1.39	187,841	-	23,263	31	4,087,265	4,223,138	-	141,873	Ord. Stk.	175½	8½	10½	Nil	
	Buenos Ayres Western	1,930	28.1.39	44,665	-	558	31	1,293,858	1,411,601	-	117,743	"	12½	5	8	Nil	
	Central Argentine	3,700	28.1.39	147,031	+	31,252	31	3,383,148	3,903,083	-	519,940	"	13½	5½	8½	Nil	
	Do.	—	—	—	—	—	—	—	—	—	—	Did.	6	212	3½	Nil	
	Cent. Uruguay of M. Video	972	21.1.39	17,959	-	2,217	30	535,592	510,959	+	24,633	Ord. Stk.	3	114	1½	Nil	
	Cordoba Central	1,218	—	—	—	—	—	—	—	—	—	Ord. Inc.	3½	3½	2	Nil	
	Costa Rica	188	Nov., 1938	17,764	-	4,572	22	112,640	123,362	-	10,722	Stk.	28	22½	21	9½	Nil
	Dorada	70	Dec., 1938	15,200	-	1,900	52	193,300	187,200	+	6,100	1 Mt. Db.	105½	104	103½	51½	Nil
	Entre Rios	810	28.1.39	16,842	-	2,131	31	487,801	443,687	+	44,114	Ord. Stk.	71½	31½	5	Nil	
	Great Western of Brazil	1,092	28.1.39	12,100	+	1,900	4	48,200	41,200	+	7,000	Ord. Sh.	3/4	1/4	1	Nil	
	International of C.I. Amer.	794	Dec., 1938	\$558,024	+	\$83,363	52	\$5,639,240	\$5,699,442	-	\$60,202	Ist Pref.	6d.	6d.	1½	Nil	
	Interoceanic of Mexico	22½	Dec., 1938	800	-	4,090	52	57,905	61,575	-	3,670	Stk.	8	61½	7½	Nil	
	La Guaira & Caracas	1,918	28.1.39	20,735	-	434	4	9,148	78,119	+	13,029	Ord. Stk.	4	1	1½	Nil	
Leopoldina	483	21.1.39	\$324,500	+	\$36,300	3	\$839,100	\$754,500	+	\$84,600	"	1½	1½	1½	Nil		
Midland of Uruguay	319	Dec., 1938	10,372	+	210	26	53,944	52,725	+	1,299	"	7½	1½	1½	Nil		
Nitrate	388	15.1.39	389	-	2,957	2	3,819	6,776	-	2,957	Ord. Sh.	52/9	19½	15½	6½	Nil	
Paraguay Central	274	28.1.39	\$3,498,000	+	\$766,000	31	\$94,501,000	\$98,365,000	-	\$3,854,000	Pr. Li. Stk.	60	551½	551½	57½	Nil	
Peruvian Corporation	1,059	Dec., 1938	68,780	-	8,728	26	409,453	501,036	-	94,583	Pref.	5½	15½	2	Nil		
Salvador	100	21.1.39	\$34,750	-	\$5,500	30	\$499,464	\$495,375	+	14,089	Pr. Li. Db.	23	20	19½	19½	Nil	
San Paulo	153½	22.1.39	27,357	-	7,751	3	83,730	94,233	-	10,503	Ord. Stk.	64	28	23½	19	Nil	
Taitai	160	Dec., 1938	3,400	-	2,785	26	1695	22,535	-	5,620	Ord. Sh.	15½	1½	1½	10	Nil	
United of Havana	1,353	28.1.39	28,609	-	5,885	31	50,752	540,000	-	38,248	Ord. Stk.	3½	1½	1	Nil		
Uruguay Northern	73	Dec., 1938	1,224	+	185	26	6,428	5,348	+	1,080	Deb. Stk.	2	1	2	Nil		
Canada	Canadian National	23,721	21.1.39	625,416	-	6,044	3	1,809,867	1,788,895	+	20,972	—	—	—	—	—	
	Canadian Northern	—	—	—	—	—	—	—	—	—	4 p.c.	Perp. Dbs.	72	60	70½	51½	Nil
	Grand Trunk	—	—	—	—	—	—	—	—	—	104	4 p.c. Gar.	90	97½	4½	Nil	
Canadian Pacific	17,186	21.1.39	469,800	-	5,000	3	1,320,200	1,404,600	-	84,400	Ord. Stk.	87½	41½	5½	Nil		
India	Assam Bengal	1,329	10.1.39	41,520	+	4,711	41	1,162,089	1,070,057	+	92,032	Ord. Stk.	81½	70	73½	41½	Nil
	Barai Light	202	10.1.39	3,472	-	1,658	41	110,737	105,405	+	5,332	Ord. Sh.	60½	54½	55½	75½	Nil
	Bengal & North Western	2,108	10.1.39	82,454	+	5,161	14	770,300	770,104	+	196	Ord. Stk.	311	278	270	70½	Nil
	Bengal Dooars & Extension	161	20.1.39	4,084	-	303	43	123,248	120,961	+	2,287	"	89	83	88½	75½	Nil
	Bengal Nagpur	3,268	10.1.39	203,700	-	4,942	41	5,353,609	5,428,425	-	74,816	"	95½	90	93½	41½	Nil
	Bombay, Baroda & C.I. India	3,085	20.1.39	262,275	-	1,950	43	6,978,750	7,065,225	-	86,475	"	112½	95	107½	58½	Nil
	Madras & Southern Mahratta	2,937	31.12.38	20,600	+	8,380	39	4,155,271	3,932,225	+	223,046	"	109	97	101½	7½	Nil
	Rohilkund & Kumaon	571	10.1.39	16,185	-	1,778	14	142,530	138,051	+	4,479	"	308	235	275	69½	Nil
	South Indian	2,531½	31.12.38	124,675	-	18,628	39	3,084,162	3,137,554	-	53,392	"	104	101	101½	41½	Nil
Various	Beira-Umtali	204	Nov., 1938	86,540	-	4,097	9	164,305	186,351	-	22,046	—	—	—	—	—	
	Egyptian Delta	620	10.1.39	6,266	-	418	41	178,459	188,998	-	10,539	Prf. Sh.	7½	5½	1½	Nil	
	Kenya & Uganda	1,625	Dec., 1938	255,468	+	59,041	52	2,656,111	2,715,524	-	59,413	—	—	—	—	—	
	Manila	—	—	—	—	—	—	—	—	—	B. Deb.	49	41	43½	95½	Nil	
	Midland of W. Australia	277	Dec., 1938	16,406	+	1,202	26	92,286	84,335	+	7,951	Inc. Deb.	93½	89	95	41½	Nil
	Nigerian	1,900	17.12.38	81,090	+	6,777	38	1,310,021	1,958,802	-	618,781	—	—	—	—	—	
	Rhodesia	2,442	Nov., 1938	392,385	-	35,841	9	779,368	895,547	-	116,229	—	—	—	—	—	
South Africa	13,285	7.1.39	562,227	-	44,526	40	25,117,360	26,072,527	-	955,167	—	—	—	—	—		
Victoria	4,774	Oct., 1938	828,129	+	18,054	18	3,064,925	2,900,281	+	104,644	—	—	—	—	—		

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/8

† Receipts are calculated @ 1s. 6d. to the rupee

‡ ex dividend

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements are based on the current rates of exchange and not on the par value